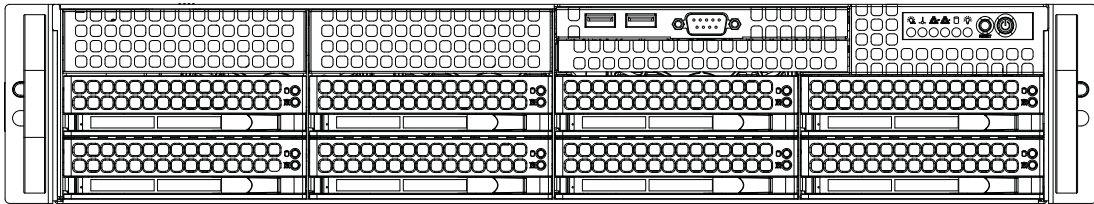


SUPERO

SuperServer AS-2021A-T2R+F
SuperServer AS-2021A-32R+F



USER'S MANUAL

1.0b

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Release Date: April 20, 2010

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Preface

About This Manual

This manual is written for professional system integrators and PC technicians. It provides information for the installation and use of the SuperServer AS-2021A-T2R+F/AS-2021A-32R+F. Installation and maintenance should be performed by experienced technicians only.

The SuperServer AS-2021A-T2R+F/32R+F is a high-end server based on the SC825TQ-R720LPB 2U rackmount chassis and the H8Dli+-F (AS-2021A-T2R+F server) or H8DI3+-F (AS-2021A-32R+F server) dual processor serverboard.

Manual Organization

Chapter 1: Introduction

The first chapter provides a checklist of the main components included with the server system and describes the main features of the H8Dli+-F/H8DI3+-F serverboard and the SC825TQ-R720LPB chassis.

Chapter 2: Server Installation

This chapter describes the steps necessary to install the SuperServer AS-2021A-T2R+F/32R+F into a rack and check out the server configuration prior to powering up the system. If your server was ordered without processor and memory components, this chapter will refer you to the appropriate sections of the manual for their installation.

Chapter 3: System Interface

Refer here for details on the system interface, which includes the functions and information provided by the control panel on the chassis as well as other LEDs located throughout the system.

Chapter 4: System Safety

You should thoroughly familiarize yourself with this chapter for a general overview of safety precautions that should be followed when installing and servicing the SuperServer AS-2021A-T2R+F/32R+F.

Chapter 5: Advanced Serverboard Setup

Chapter 5 provides detailed information on the H8Dli+-F/H8DI3+-F serverboard, including the locations and functions of connections, headers and jumpers. Refer to this chapter when adding or removing processors or main memory and when reconfiguring the serverboard.

Chapter 6: Advanced Chassis Setup

Refer to Chapter 6 for detailed information on the SC825TQ-R720LPB server chassis. You should follow the procedures given in this chapter when installing, removing or reconfiguring SAS/SATA or peripheral drives and when replacing system power supply units and cooling fans.

Chapter 7: BIOS

The BIOS chapter includes an introduction to BIOS and provides detailed information on running the CMOS Setup Utility.

Appendix A: BIOS Error Beep Codes

Appendix B: Installing Windows

Appendix C: System Specifications

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Chapter 1

Introduction

1-1 Overview

The SuperServer AS-2021A-T2R+F/32R+F is a high-end server comprised of two main subsystems: the SC825TQ-R720LPB 2U server chassis and the H8Dli+-F/H8DI3+-F dual processor serverboard. Please refer to our web site for information on operating systems that have been certified for use with the system (www.supermicro.com).

In addition to the serverboard and chassis, various hardware components have been included with the AS-2021A-T2R+F/32R+F, as listed below:

- Three 8-cm chassis fans (FAN-0094L4)
- Two 2U passive heatsinks for AMD CPU Socket F (SNK-P0023P+)
- One air shroud (MCP-310-82510-0B)
- SAS/SATA Accessories:
 - One SAS backplane (BPN-SAS-825TQ)
 - Eight drive carriers (MCP-220-00024-0B)
 - Two fixed drive trays (MCP-220-82502-0B)

AS-2021A-T2R+F/32R+F server only:

Two 13-cm to 46-cm IPASS to 4 SATA cables (CBL-0176L-01)

AS-2021A-T2R+F server only:

One 61-cm SATA Straight-Straight cable (CBL-0044L)

Two 35-cm SATA cables (CBL-006IL)

Two 40-cm 8-pin to 8-pin ribbon cables with tube for SGPIO (CBL-0157L)

Two 48-cm Flat Straight-Straight SATA cables (CBL-0178L)

One 70-cm Flat Straight-Straight SATA cable (CBL-0179L)

One rail set (MCP-290-00053-0N)

- One CD containing drivers, manual and utilities

- Optional:
 - Floppy disk drive (FPD-TEAC-SB)
 - Floppy disk drive kit (MCP-220-82503-0B)
 - USB/COM port tray (MCP-220-00007-01)
 - CD-ROM kit (CSE-PT92L)
 - DVD-ROM driver (DVM-TEAC-824B)
 - Connecting cable (CBL-0139L)

1-2 Serverboard Features

At the heart of the SuperServer AS-2021A-T2R+F/32R+F lies the H8Dli+-F/H8DI3+-F, a dual processor serverboard based on the AMD SR5690 + SP5100 chipset and designed to provide maximum performance. Below are the main features of the H8Dli+-F/H8DI3+-F. (See Figure 1-1 for a block diagram of the chipset).

Processors

The H8Dli+-F/H8DI3+-F supports dual AMD Opteron 2000 series (Socket F type) processors. Please refer to the serverboard description pages on our web site for a complete listing of supported processors (www.supermicro.com).

HyperTransport Technology

HyperTransport technology is a high-speed, low latency point to point link that was designed to increase the communication speed by a factor of up to 48x between integrated circuits. This is done partly by reducing the number of buses in the chipset to reduce bottlenecks and by enabling a more efficient use of memory in multi-processor systems. The end result is a significant increase in bandwidth within the chipset.

Memory

The H8Dli+-F/H8DI3+-F has sixteen DIMM slots that can support up to 128 GB of DDR2-800/667/533 registered ECC SDRAM. The memory operates in an interleaved configuration and requires modules of the same size and speed to be installed two at a time. See Chapter 5 for details.

Serial ATA

A Serial ATA controller is integrated into the SP5100 (South Bridge) portion of the chipset to provide a six-port 3 Gb/s SATA subsystem, which is RAID 0, 1 and 10 supported. The SATA drives are hot-swappable units.

Note: The operating system you use must have RAID support to enable the hot-swap capability and RAID function of the SATA drives.

SAS (AS-2021A-32R+F Only)

An LSI 1068E SAS controller is integrated into the H8DM3-2 to provide an eightport SAS (Serial Attached SCSI) subsystem, which is RAID 0, 1, 10 and JBOD supported. (Optional RAID 5 support is available with the iButton installed.) The SAS drives are hot-swappable units. SR and IT modes are supported but not IR.

Note: The operating system you use must have RAID support to enable the hotswap capability and RAID function of the SAS drives.

PCI Expansion Slots

The H8Dli+-F/H8DI3+-F has two PCI Express 2.0 x16 (x8 signal) slots, one PCI-Express x8 slot, one PCI Express x8 slot (x4 signal) and two 64-bit 133/100 MHz PCI-X slots.

Onboard Controllers/Ports

A floppy drive connector is included on the serverboard as well as one onboard ATA/100 connector, which supports IDE hard drives or ATAPI devices. The color-coded I/O ports include one COM port (an additional COM header is located on the serverboard), a VGA (monitor) port, two USB 2.0 ports (two additional USB headers and two Type A ports are included on the serverboard), PS/2 mouse and keyboard ports and two gigabit Ethernet ports. An additional IPMI LAN port is provided as well for an IPMI connection.

Graphics Controller

The H8Dli+-F/H8DI3+-F features an integrated video controller based on the Matrox® G200 16 MB graphics chip. The Matrox G200 was designed specifically for servers, featuring low power consumption, high reliability and superior longevity.

Other Features

Other onboard features that promote system health include onboard voltage monitors, a chassis intrusion header, auto-switching voltage regulators, chassis and CPU overheat sensors, virus protection and BIOS rescue.

1-3 Server Chassis Features

The following is a general outline of the main features of the SC825TQ-R720LPB server chassis.

System Power

The SC825TQ-R720LPB features a redundant 720W power supply composed of two separate power modules. This power redundancy feature allows you to replace a failed power supply without shutting down the system.

Serial ATA/SAS Subsystem

The SC825TQ-R720LPB supports up to eight 3 Gb/s drives. The SATA/SAS drives are hot-swappable units and are connected to a backplane that provides power and control.

Note: The operating system you use must have RAID support to enable the hot-swap capability of the SATA/SAS drives.

Front Control Panel

The control panel on the SuperServer AS-2021A-T2R+F/32R+F provides you with system monitoring and control. LEDs indicate system power, HDD activity, network activity, system overheat and power supply failure. A main power button and a system reset button are also included. In addition, two USB ports and one serial port have been incorporated into the control panel to provide front side USB and COM port access.

I/O Backplane

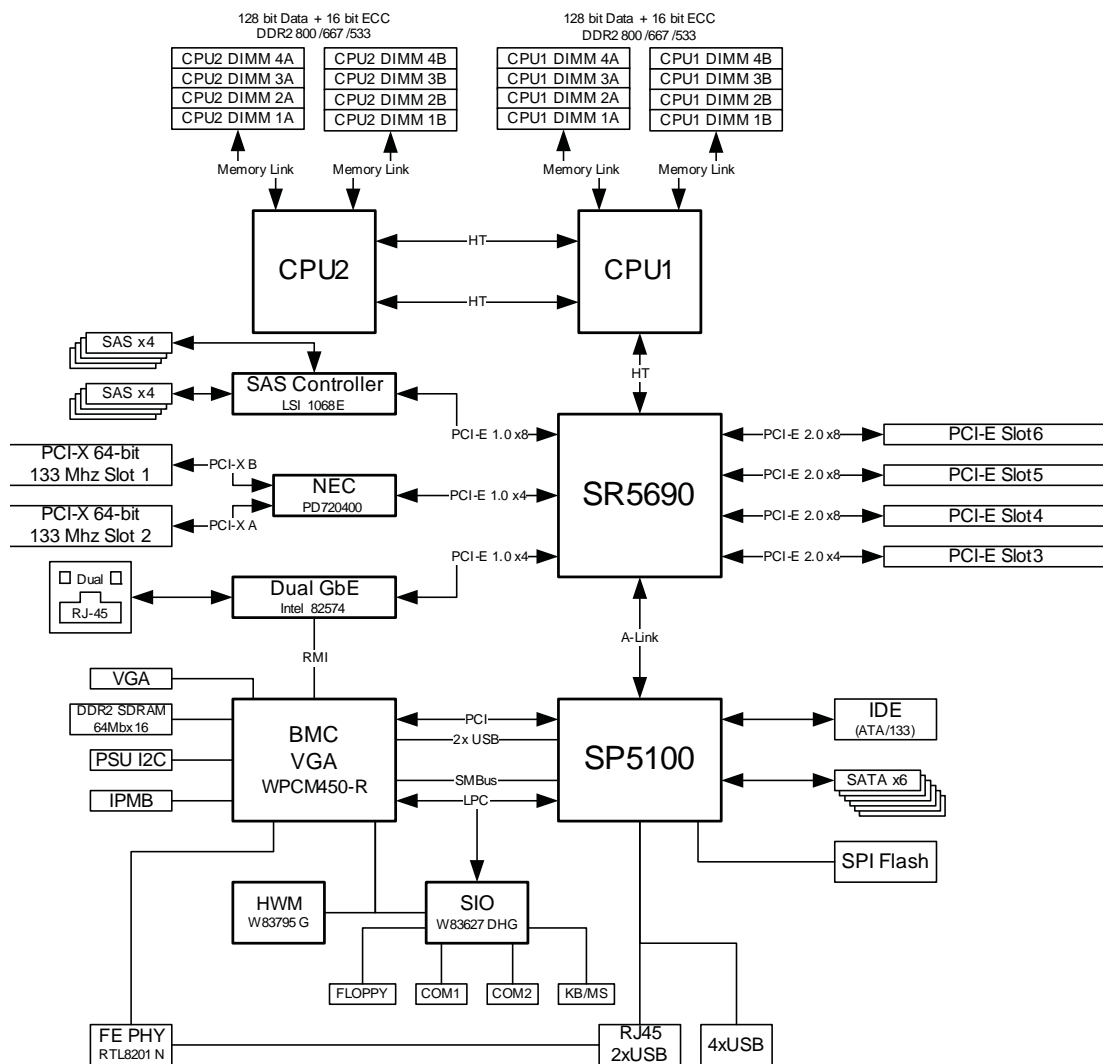
The SC825TQ-R720LPB is an ATX form factor chassis designed to be used in a 2U rackmount configuration. The I/O backplane provides seven low-profile expansion slots, one COM port, a VGA port, two USB 2.0 ports, PS/2 mouse and keyboard ports, two gigabit Ethernet ports and one dedicated IPMI LAN port.

Cooling System

The SC825TQ-R720LPB chassis has an innovative cooling design that includes three 8-cm hot-plug system cooling fans located in the middle section of the chassis. An air shroud channels the airflow from the system fans to efficiently cool the processor area of the system. The power supply module also includes a cooling fan.

**Figure 1-1. AMD SR5690/SP5100 Chipset:
System Block Diagram**

Note: This is a general block diagram. Please see Chapter 5 for details.



1-4 Contacting Supermicro

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Email: marketing@supermicro.com (General Information)
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Web Site: www.supermicro.com.tw

Technical Support:

Email: support@supermicro.com.tw

Tel: 886-2-8228-1366, ext.132 or 139

Chapter 2

Server Installation

2-1 Overview

This chapter provides a quick setup checklist to get your SuperServer AS-2021A-T2R+F/32R+F up and running. Following these steps in the order given should enable you to have the system operational within a minimum amount of time. This quick setup assumes that your system has come to you with the processors and memory preinstalled. If your system is not already fully integrated with a serverboard, processors, system memory etc., please turn to the chapter or section noted in each step for details on installing specific components.

2-2 Unpacking the System

You should inspect the box the SuperServer AS-2021A-T2R+F/32R+F was shipped in and note if it was damaged in any way. If the server itself shows damage you should file a damage claim with the carrier who delivered it.

Decide on a suitable location for the rack unit that will hold the SuperServer AS-2021A-T2R+F/32R+F. It should be situated in a clean, dust-free area that is well ventilated. Avoid areas where heat, electrical noise and electromagnetic fields are generated. You will also need it placed near a grounded power outlet. Read the Rack and Server Precautions in the next section.

2-3 Preparing for Setup

The box the SuperServer AS-2021A-T2R+F/32R+F was shipped in should include two sets of rail assemblies, two rail mounting brackets and the mounting screws you will need to install the system into the rack. Follow the steps in the order given to complete the installation process in a minimum amount of time. Please read this section in its entirety before you begin the installation procedure outlined in the sections that follow.

Choosing a Setup Location

- Leave enough clearance in front of the rack to enable you to open the front door completely (~25 inches) and approximately 30 inches of clearance in the back of the rack to allow for sufficient airflow and ease in servicing.

- This product is for installation only in a Restricted Access Location (dedicated equipment rooms, service closets and the like).
- This product is not suitable for use with visual display work place devices according to §2 of the the German Ordinance for Work with Visual Display Units.



Warnings and Precautions!



Rack Precautions

- Ensure that the leveling jacks on the bottom of the rack are fully extended to the floor with the full weight of the rack resting on them.
- In single rack installation, stabilizers should be attached to the rack. In multiple rack installations, the racks should be coupled together.
- Always make sure the rack is stable before extending a component from the rack.
- You should extend only one component at a time - extending two or more simultaneously may cause the rack to become unstable.

Server Precautions

- Review the electrical and general safety precautions in Chapter 4.
- Determine the placement of each component in the rack *before* you install the rails.
- Install the heaviest server components on the bottom of the rack first, and then work up.
- Use a regulating uninterruptible power supply (UPS) to protect the server from power surges, voltage spikes and to keep your system operating in case of a power failure.
- Allow the hot plug SAS/SATA drives and power supply modules to cool before touching them.
- Always keep the rack's front door and all panels and components on the servers closed when not servicing to maintain proper cooling.

Rack Mounting Considerations

Ambient Operating Temperature

If installed in a closed or multi-unit rack assembly, the ambient operating temperature of the rack environment may be greater than the ambient temperature of the room. Therefore, consideration should be given to installing the equipment in an environment compatible with the manufacturer's maximum rated ambient temperature (T_{mra}).

Reduced Airflow

Equipment should be mounted into a rack so that the amount of airflow required for safe operation is not compromised.

Mechanical Loading

Equipment should be mounted into a rack so that a hazardous condition does not arise due to uneven mechanical loading.

Circuit Overloading

Consideration should be given to the connection of the equipment to the power supply circuitry and the effect that any possible overloading of circuits might have on overcurrent protection and power supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

Reliable Ground

A reliable ground must be maintained at all times. To ensure this, the rack itself should be grounded. Particular attention should be given to power supply connections other than the direct connections to the branch circuit (i.e. the use of power strips, etc.).

2-4 Installing the System into a Rack

This section provides information on installing the SC825 chassis into a rack unit with the quick-release rails provided. There are a variety of rack units on the market, which may mean the assembly procedure will differ slightly. You should also refer to the installation instructions that came with the rack unit you are using.

Note: This rail will fit a rack between 26" and 33.5" deep.

Separating the Sections of the Rack Rails

The chassis package includes two rail assemblies in the rack mounting kit. Each assembly consists of two sections: an inner fixed chassis rail that secures directly to the server chassis and an outer fixed rack rail that secures directly to the rack itself.

Installing the Inner Rail Extension

The SC825 chassis includes a set of inner rails in two sections: inner rails and inner rail extensions. The inner rails are pre-attached to the chassis, and do not interfere with normal use of the chassis if you decide not to use a server rack. The inner rail extension is attached to the inner rail to mount the chassis in the rack.

Installing the Inner Rails

1. Place the inner rail extensions on the side of the chassis aligning the hooks of the chassis with the rail extension holes. Make sure the extension faces "outward" just like the pre-attached inner rail.
2. Slide the extension toward the front of the chassis.
3. Secure the chassis with 2 screws as illustrated. Repeat steps for the other inner rail extension.

Figure 2-1. Separating the Rack Rails

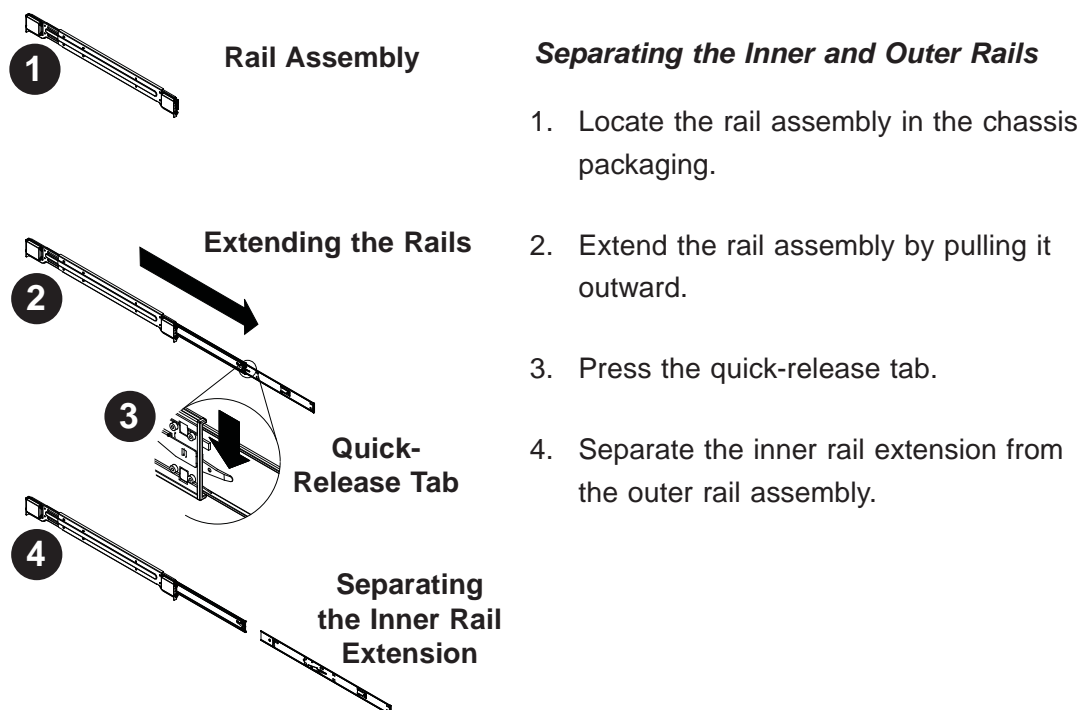
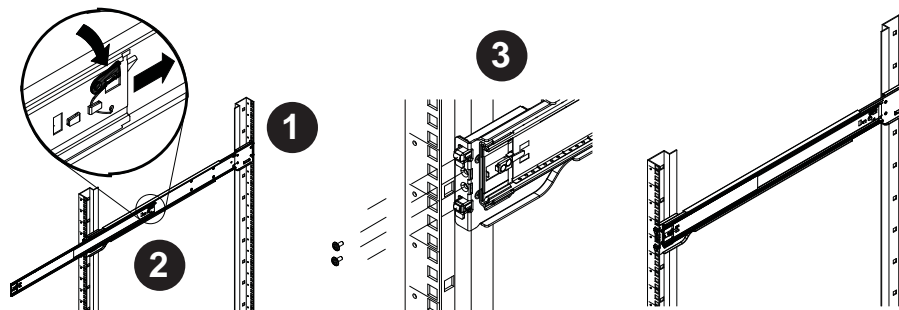


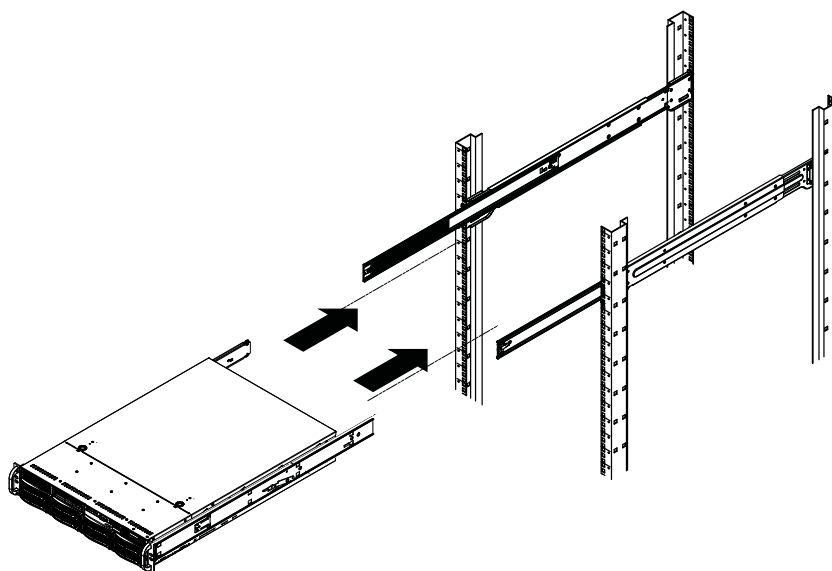
Figure 2-2. Assembling the Outer Rails

Outer Rack Rails

Outer rails attach to the rack and hold the chassis in place. The outer rails for the SC825 chassis extend between 30 inches and 33 inches.

Installing the Outer Rails to the Rack

1. Secure the back end of the outer rail to the rack, using the screws provided.
2. Press the button where the two outer rails are joined to retract the smaller outer rail.
3. Hang the hooks of the rails onto the rack holes and if desired, use screws to secure the front of the outer rail onto the rack.
4. Repeat steps 1-3 for the remaining outer rail.

Figure 2-3. Installing the Rack Rails***Installing the Chassis into a Rack***

1. Extend the outer rails as illustrated above.
2. Align the inner rails of the chassis with the outer rails on the rack.
3. Slide the inner rails into the outer rails, keeping the pressure even on both sides. When the chassis has been pushed completely into the rack, it should click into the locked position.
4. Optional screws may be used to secure the to hold the front of the chassis to the rack.

2-5 Checking the Serverboard Setup

After you install the AS-2021A-T2R+F/32R+F in the rack, you will need to open the unit to make sure the serverboard is properly installed and all the connections have been made.

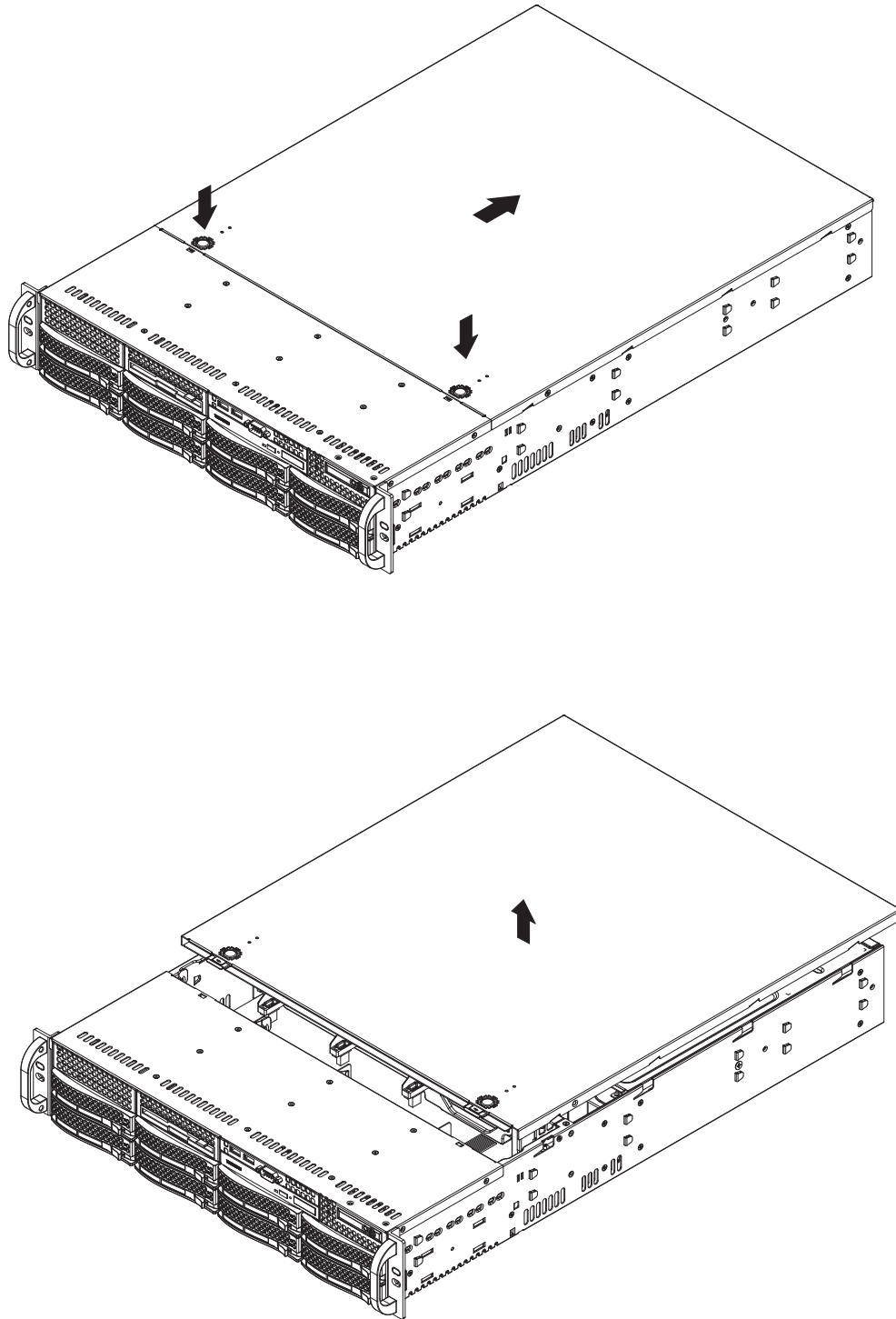
Accessing the inside of the System

1. First, grasp the two handles on either side and pull the unit straight out until it locks (you will hear a "click").
2. Next, depress the two buttons on the top of the chassis to release the top cover.
3. You can then lift the top cover from the chassis to gain full access to the inside of the server.

Checking the Components and Setup

1. You may have one or two processors already installed into the serverboard. Each processor needs its own heat sink. See Chapter 5 for instructions on processor and heat sink installation.
2. Your AS-2021A-T2R+F/32R+F server system may have come with system memory already installed. Make sure all DIMMs are fully seated in their slots. For details on adding system memory, refer to Chapter 5.
3. If desired, you can install add-on cards to the system. See Chapter 5 for details on installing PCI add-on cards.
4. Make sure all power and data cables are properly connected and not blocking the chassis airflow. Also make sure that no cables are positioned in front of the fans. See Chapter 5 for details on cable connections.

Figure 2-3. Accessing the Inside of the System



2-6 Checking the Drive Bay Setup

Next, you should check to make sure the peripheral drives and the SAS/SATA drives have been properly installed and all connections have been made.

Checking the Drives

1. All drives are accessible from the front of the server. For servicing the DVD-ROM and floppy drives, you will need to remove the top chassis cover. The hard drives can be installed and removed from the front of the chassis without removing the top chassis cover.
2. A slim DVD-ROM and a floppy drive may be preinstalled in your server. Refer to Chapter 6 if you need to install a DVD-ROM and/or floppy disk drive to the system.
3. Depending upon your system's configuration, your system may have one or more drives already installed. If you need to install hard drives, please refer to Chapter 6.

Checking the Airflow

1. Airflow is provided by three hot-swappable 8-cm chassis cooling fans. The system component layout was carefully designed to direct sufficient cooling airflow to the components that generate the most heat.
2. Note that all power and data cables have been routed in such a way that they do not block the airflow generated by the fans.

Providing Power

1. Plug the power cord(s) from the power supply unit(s) into a high-quality power strip that offers protection from electrical noise and power surges. It is recommended that you use an uninterruptible power supply (UPS).
2. Depress the power on button on the front of the chassis.

Chapter 3

System Interface

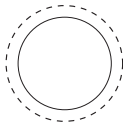
3-1 Overview

There are several LEDs on the control panel as well as others on the SATA drive carriers to keep you constantly informed of the overall status of the system as well as the activity and health of specific components. There are also two buttons on the chassis control panel.

3-2 Control Panel Buttons

There are two buttons located on the front of the chassis: a reset button and a power on/off button.

RESET



Reset

Use the reset button to reboot the system.



Power

This is the main power button, which is used to apply or turn off the main system power. Turning off system power with this button removes the main power but keeps standby power supplied to the system.

3-3 Control Panel LEDs

The control panel located on the front of the chassis has several LEDs. These LEDs provide you with critical information related to different parts of the system. This section explains what each LED indicates when illuminated and any corrective action you may need to take.



Power Fail

Indicates a power supply module has failed. The second power supply module will take the load and keep the system running but the failed module will need to be replaced. Refer to Chapter 6 for details on replacing the power supply. This LED should be off when the system is operating normally.



Overheat/Fan Fail:

When this LED flashes, it indicates a fan failure. When on continuously it indicates an overheat condition, which may be caused by cables obstructing the airflow in the system or the ambient room temperature being too warm. Check the routing of the cables and make sure all fans are present and operating normally. You should also check to make sure that the chassis covers are installed. Finally, verify that the heatsinks are installed properly (see Chapter 5). This LED will remain flashing or on as long as the indicated condition exists.



NIC1

Indicates network activity on the LAN1 port when flashing.



NIC2

Indicates network activity on the LAN2 port when flashing.



HDD

Indicates IDE channel activity. On the SuperServer AS-2021A-T2R+F/32R+F, this LED indicates hard drive and/or DVD-ROM drive activity when flashing.



Power

Indicates power is being supplied to the system's power supply units. This LED should normally be illuminated when the system is operating.

3-4 SAS/SATA Drive Carrier LEDs

Each SATA drive carrier has two LEDs:

- **Green:** When illuminated, the green LED on the SAS/SATA drive carrier indicates drive activity. A connection to the SATA backplane enables this LED to blink on and off when that particular drive is being accessed. Please refer to Chapter 6 for instructions on replacing failed drives.
- **Red:** The red LED indicates a SAS/SATA drive failure. If one of the drives fails, you should be notified by your system management software. Please refer to Chapter 6 for instructions on replacing failed drives.

Notes

Chapter 4

System Safety

4-1 Electrical Safety Precautions



Basic electrical safety precautions should be followed to protect yourself from harm and the SuperServer AS-2021A-T2R+F/32R+F from damage:

- Be aware of the locations of the power on/off switch on the chassis as well as the room's emergency power-off switch, disconnection switch or electrical outlet. If an electrical accident occurs, you can then quickly remove power from the system.
- Do not work alone when working with high voltage components.
- Power should always be disconnected from the system when removing or installing main system components, such as the serverboard, memory modules and floppy drive. When disconnecting power, you should first power down the operating system first and then unplug the power cords. The unit has more than one power supply cord. Disconnect two power supply cords before servicing to avoid electrical shock.
- When working around exposed electrical circuits, another person who is familiar with the power-off controls should be nearby to switch off the power if necessary.
- Use only one hand when working with powered-on electrical equipment. This is to avoid making a complete circuit, which will cause electrical shock. Use extreme caution when using metal tools, which can easily damage any electrical components or circuit boards they come into contact with.
- Do not use mats designed to decrease static electrical discharge as protection from electrical shock. Instead, use rubber mats that have been specifically designed as electrical insulators.
- The power supply power cords must include a grounding plug and must be plugged into grounded electrical outlets.

- This product may be connected to an IT power system. In all cases, make sure that the unit is also reliably connected to Earth (ground).
- Serverboard Battery: **CAUTION** - There is a danger of explosion if the onboard battery is installed upside down, which will reverse its polarities (see Figure 4-1). This battery must be replaced only with the same or an equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.
- DVD-ROM Laser: **CAUTION** - this server may have come equipped with a DVD-ROM drive. To prevent direct exposure to the laser beam and hazardous radiation exposure, do not open the enclosure or use the unit in any unconventional way.
- Mainboard replaceable soldered-in fuses: Self-resetting PTC (Positive Temperature Coefficient) fuses on the mainboard must be replaced by trained service technicians only. The new fuse must be the same or equivalent as the one replaced. Contact technical support for details and support.

4-2 General Safety Precautions



Follow these rules to ensure general safety:

- Keep the area around the AS-2021A-T2R+F/32R+F clean and free of clutter.
- The AS-2021A-T2R+F/32R+F weighs approximately 57 lbs (25.9 kg.) when fully loaded. When lifting the system, two people at either end should lift slowly with their feet spread out to distribute the weight. Always keep your back straight and lift with your legs.
- Place the chassis top cover and any system components that have been removed away from the system or on a table so that they won't accidentally be stepped on.
- While working on the system, do not wear loose clothing such as neckties and unbuttoned shirt sleeves, which can come into contact with electrical circuits or be pulled into a cooling fan.

- Remove any jewelry or metal objects from your body, which are excellent metal conductors that can create short circuits and harm you if they come into contact with printed circuit boards or areas where power is present.
- After accessing the inside of the system, close the system back up and secure it to the rack unit with the retention screws after ensuring that all connections have been made.

4-3 ESD Precautions



Electrostatic discharge (ESD) is generated by two objects with different electrical charges coming into contact with each other. An electrical discharge is created to neutralize this difference, which can damage electronic components and printed circuit boards. The following measures are generally sufficient to neutralize this difference before contact is made to protect your equipment from ESD:

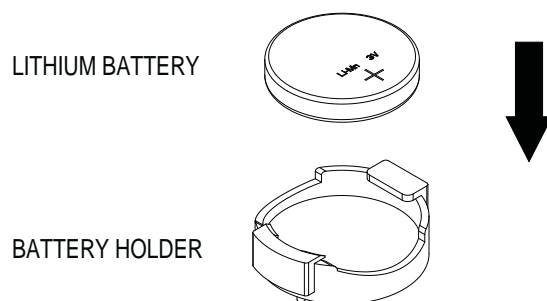
- Use a grounded wrist strap designed to prevent static discharge.
- Keep all components and printed circuit boards (PCBs) in their antistatic bags until ready for use.
- Touch a grounded metal object before removing the board from the antistatic bag.
- Do not let components or PCBs come into contact with your clothing, which may retain a charge even if you are wearing a wrist strap.
- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or contacts.
- When handling chips or modules, avoid touching their pins.
- Put the serverboard and peripherals back into their antistatic bags when not in use.
- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the serverboard.

4-4 Operating Precautions



Care must be taken to assure that the chassis cover is in place when the AS-2021A-T2R+F/32R+F is operating to assure proper cooling. Out of warranty damage to the system can occur if this practice is not strictly followed.

Figure 4-1. Installing the Onboard Battery



Please handle used batteries carefully. Do not damage the battery in any way; a damaged battery may release hazardous materials into the environment. Do not discard a used battery in the garbage or a public landfill. Please comply with the regulations set up by your local hazardous waste management agency to dispose of your used battery properly.

Chapter 5

Advanced Serverboard Setup

This chapter covers the steps required to install the H8Dli+-F/H8DI3+-F serverboard into the chassis, connect the data and power cables and install add-on cards. All serverboard jumpers and connections are also described. A layout and quick reference chart are included in this chapter for your reference. Remember to completely close the chassis when you have finished working with the serverboard to better cool and protect the system.

5-1 Handling the Serverboard

Electrostatic discharge (ESD) can damage electronic components. To prevent damage to any printed circuit boards (PCBs), it is important to handle them very carefully (see previous chapter). To prevent the serverboard from bending, keep one hand under the center of the board to support it when handling. The following measures are generally sufficient to protect your equipment from electric static discharge.

Precautions

- Use a grounded wrist strap designed to prevent Electrostatic Discharge (ESD).
- Touch a grounded metal object before removing any board from its antistatic bag.
- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the serverboard, add-on cards and peripherals back into their antistatic bags when not in use.
- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the serverboard.

Unpacking

The serverboard is shipped in antistatic packaging to avoid electrical static discharge. When unpacking the board, make sure the person handling it is static protected.

5-2 Serverboard Installation

This section explains the first step of physically mounting the H8Dli+-F/H8DI3+-F into the SC825TQ-R720LP chassis. Following the steps in the order given will eliminate the most common problems encountered in such an installation. To remove the serverboard, follow the procedure in reverse order.

Installing to the Chassis

1. Access the inside of the system by removing the screws from the back lip of the top cover of the chassis, then pull the cover off.
2. The H8Dli+-F/H8DI3+-F requires a chassis big enough to support a 13.68" x 13.05" serverboard, such as Supermicro's SC825TQ-R720LP.
3. Make sure that the I/O ports on the serverboard align properly with their respective holes in the I/O shield at the back of the chassis.
4. Carefully mount the serverboard to the serverboard tray by aligning the board holes with the raised metal standoffs that are visible in the chassis.
5. Insert screws into all the mounting holes on your serverboard that line up with the standoffs and tighten until snug (if you screw them in too tight, you might strip the threads). Metal screws provide an electrical contact to the serverboard ground to provide a continuous ground for the system.
6. Finish by replacing the top cover of the chassis.

Warning: To avoid damaging the motherboard and its components, do not apply any force greater than 8 lbs. per square inch when installing a screw into a mounting hole.

5-3 Connecting Cables

Now that the serverboard is installed, the next step is to connect the cables to the board. These include the data cables for the peripherals and control panel and the power cables.

Connecting Data Cables

The cables used to transfer data from the peripheral devices have been carefully routed to prevent them from blocking the flow of cooling air that moves through the system from front to back. If you need to disconnect any of these cables, you should take care to keep them routed as they were originally after reconnecting them (make sure the red wires connect to the pin 1 locations). The following data cables (with their locations noted) should be connected. (See the layout on page 5-10 for connector locations.)

- SATA drive data cables (I-SATA0 ~ I-SATA5)
- SAS drive data cables (SAS0 ~ SAS7)
- Control Panel cable (JF1)
- DVD-ROM drive cable (IDE) (optional)

Important! Make sure the the cables do not come into contact with the fans.

Connecting Power Cables

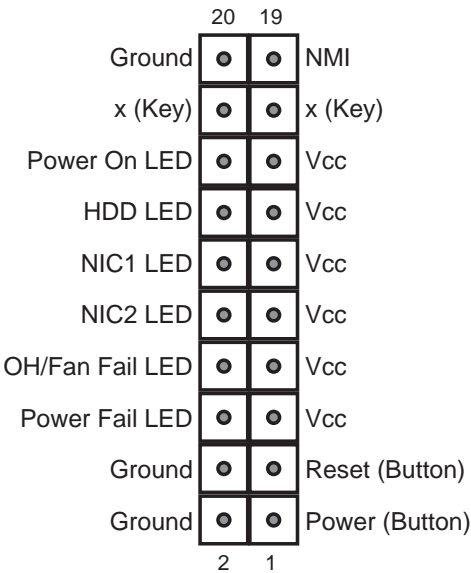
The H8Dli+-F/H8DI3+-F has a 24-pin primary power supply connector (JPW1) for connection to the ATX power supply. In addition, there are two 8-pin 12V processor power connectors (JPW3 and JPW4) that must be connected to your power supply. See Section 5-9 for power connector pin definitions.

Connecting the Control Panel

JF1 contains header pins for various front control panel connectors. See Figure 5-1 for the pin locations of the various front control panel buttons and LED indicators.

All JF1 wires have been bundled into a single cable to simplify this connection. Make sure the red wire plugs into pin 1 as marked on the board. The other end connects to the Control Panel PCB board, located just behind the system status LEDs on the chassis. See Chapter 5 for details and pin descriptions.

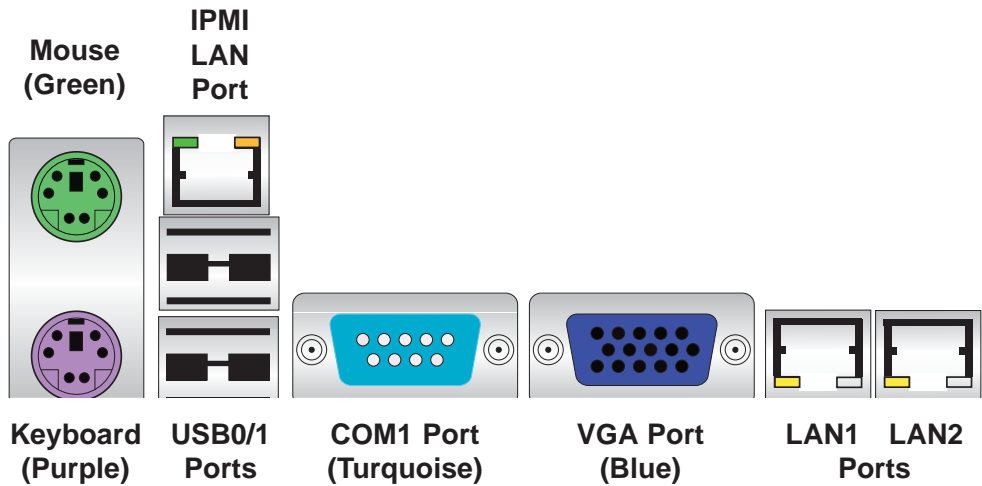
Figure 5-1. Control Panel Header Pins



5-4 I/O Ports

The I/O ports are color coded in conformance with the PC 99 specification. See Figure 5-2 below for the colors and locations of the various I/O ports.

Figure 5-2. I/O Ports



5-5 Installing the Processor and Heatsink



When handling the processor package, avoid placing direct pressure on the label area of the fan.

Notes:

1. Always connect the power cord last and always remove it before adding, removing or changing any hardware components. Make sure that you install the processor into the CPU socket before you install the CPU heatsink.
2. AMD's boxed processor package contains the CPU fan and heatsink assembly. If you buy a CPU separately, make sure that you use an AMD-certified multi-directional heatsink and fan only.
3. Make sure to install the serverboard into the chassis before you install the CPU heatsink and heatsink fan.
4. When purchasing an AMD Opteron 2000 series processor or when receiving a serverboard without an Opteron 2000 processor pre-installed, make sure that the plastic CPU cap is in place and none of the socket pins are bent; otherwise, contact your retailer immediately.
5. Refer to the Supermicro web site for updates on CPU support.

Installing an Opteron 2000 Processor

Note: The photos on this page and succeeding pages are for illustration purposes only. They do not necessarily reflect the exact product(s) described in this manual.

1. Begin by removing the cover plate that protects the CPU. Lift the lever on the CPU socket until it points straight up. With the lever raised, lift open the silver CPU retention plate.
2. Use your thumb and your index finger to hold the CPU. Locate and align pin 1 of the CPU socket with pin 1 of the CPU. Both are marked with a triangle. Align pin 1 of the CPU with pin 1 of the socket.



3. Once aligned, carefully place the CPU into the socket. Do not drop the CPU on the socket, move the CPU horizontally or vertically or rub the CPU against the socket or against any pins of the socket, which may damage the CPU and/or the socket.



4. With the CPU inserted into the socket, inspect the four corners of the CPU to make sure that it is properly installed and flush with the socket. Then, gently lower the silver CPU retention plate into place.



5. Carefully press the CPU socket lever down until it locks into its retention tab. For a dual-CPU system, repeat these steps to install another CPU into the CPU#2 socket (and into CPU#2, #3 and #4 sockets for a quad-CPU configuration).



Note: In single and dual-CPU configurations, memory must be installed in the DIMM slots associated with the installed CPU(s). Memory is limited to a maximum of 32 for single CPU and 64 GB for dual CPU configurations.

Installing a Passive Heatsink

To install the SNK-0023P+ Passive Heatsink, use the following procedure:

Installing a SNK-0023P+ Passive Heatsink

Note: Do not apply any thermal grease to the heatsink - the required amount has already been applied.

1. Hold the heatsink and place the heatsink on top of the CPU so that the two mounting holes are aligned with those on the retention mechanism.
2. Make sure the force of the screwdriver torsion is under 6.025 kgf-cm (5.23 lbs-in), and keep screw direction vertical.
3. Screw in two opposite screws until they are just snug (do not fully tighten them yet).
4. Finish by fully tightening both screws after they are both in snug.

Removing the Heatsink



Warning: We do not recommend removing the CPU or the heatsink. If you do need to remove the heatsink, please follow the instructions below to prevent damage to the CPU or other components.

Removing a Passive Heatsink

1. Unplug the power cord from the power supply.
2. Use your fingertips to gently press on the fastener cap. Then turn it counterclockwise for a 1/4 (90°) turn and then pull the fastener upward to loosen it.
3. Repeat Step 3 to loosen all fasteners from the mounting holes.
4. With all fasteners loosened, remove the heatsink from the CPU.

5-6 Installing Memory



CAUTION! Exercise extreme care when installing or removing DIMM modules to prevent any possible damage.

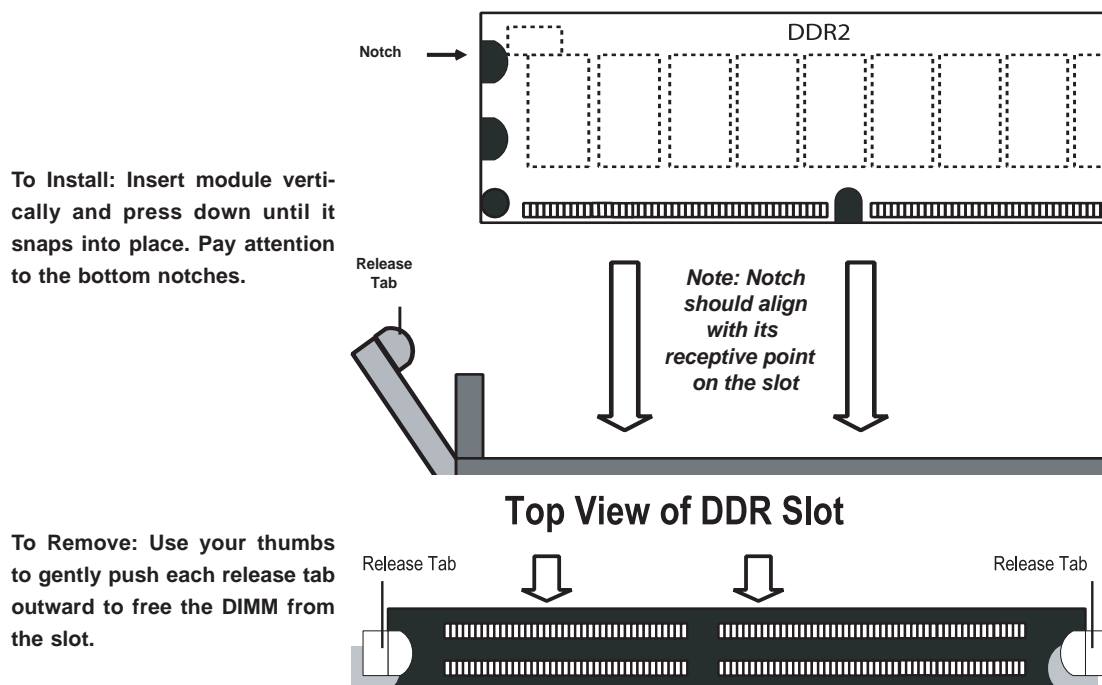
Memory Support

The H8Dli+-F/H8DI3+-F serverboard supports up to 128 GB of DDR2-800/667/533 registered ECC SDRAM. Two-way interleaved memory is supported. (Populating DIMM1A and DIMM1B and/or DIMM2A and DIMM2B with memory modules of the same size and type will result in two-way interleaved memory, which is faster than single channel, non-interleaved memory.) Note that when ECC memory is used, it may take 25-40 seconds for the VGA to display.)

Installing Memory Modules

1. Insert each DDR2 memory module vertically into its slot, starting with DIMM #1A. Pay attention to the notch along the bottom of the module to prevent inserting the module incorrectly.
2. Gently press down on the DIMM module until it snaps into place in the slot. Repeat for all modules. (See support information below.)
3. To enhance memory performance, install pairs of memory modules of the same type and of the same bank (DIMM1A and DIMM1B) and then the next bank (DIMM2A and DIMM2B).

Figure 5-3. DIMM Installation



Memory Support

The H8Dli+-F/H8DI3+-F supports up to 128 GB of single or dual-channel DDR2-800/667/533 registered ECC SDRAM in 16 DIMM slots. DIMM sizes of 8 GB, 4 GB, 2 GB and 1 GB are supported. If only one CPU is installed, maximum supported memory is halved (64 GB).

Populating DIMMs

Follow the tables below when installing memory.

Notes: Due to OS limitations, some operating systems may not show more than 4 GB of memory.

Due to memory allocation to system devices, the amount of memory that remains available for operational use will be reduced when 4 GB of RAM is used. The reduction in memory availability is disproportional. (See the Table below.)

Memory Population for Optimal Performance (for each CPU) (For Interleaved 128-bit Operation)								
# DIMMs	CPU1 1A/1B	CPU1 2A/2B	CPU1 3A/3B	CPU1 4A/4B	CPU2 1A/1B	CPU2 2A/2B	CPU2 3A/3B	CPU2 4A/4B
2 DIMMs	X							
4 DIMMs	X				X			
6 DIMMs	X	X			X			
8 DIMMs	X	X			X	X		
10 DIMMs	X	X	X		X	X		
12 DIMMs	X	X	X		X	X	X	
14 DIMMs	X	X	X	X	X	X	X	
16 DIMMs	X	X	X	X	X	X	X	X

Note: An X indicates a pair of populated DIMM slots.

Note: If adding at least 4 DIMMs (with two CPU's installed), the configurations with DIMMs spread over both CPUs result in optimized performance.

Note: The first two DIMMs **must** be installed in the CPU1 memory slots.

Possible System Memory Allocation & Availability		
System Device	Size	Physical Memory Remaining (-Available) (4 GB Total System Memory)
Firmware Hub flash memory (System BIOS)	1 MB	3.99 GB
Local APIC	4 KB	3.99 GB
Area Reserved for the chipset	2 MB	3.99 GB
I/O APIC (4 Kbytes)	4 KB	3.99 GB
PCI Enumeration Area 1	256 MB	3.76 GB
PCI Express (256 MB)	256 MB	3.51 GB
PCI Enumeration Area 2 (if needed) -Aligned on 256-MB boundary-	512 MB	3.01 GB
VGA Memory	16 MB	2.85 GB
TSEG	1 MB	2.84 GB
Memory available for the OS & other applications		2.84 GB

5-7 Installing PCI Add-On Cards

The AS-2021A-T2R+F/32R+F can accommodate seven low-profile, full-length PCI add-on cards.

Installing an Add-on Card

1. Begin by removing the shield for the PCI slot you wish to populate.
2. Fully seat the card into the slot, pushing down with your thumbs evenly on both sides of the card.
3. Finish by using a screw to secure the top of the card shield to the chassis. The PCI slot shields protect the serverboard and its components from EMI and aid in proper ventilation, so make sure there is always a shield covering each unused slot.

H8Dli+-F/H8DI3+-F Series Serverboard Quick Reference

Jumper	Description	Default Setting
JBT1	CMOS Clear	(See Section 2-7)
JCF1	Compact Flash Master/Slave	Closed (Master)
JI ² C1/JI ² C2	I ² C to PCI-E Slot Enable/Disable	Both Closed (Enabled)
JPG1	VGA Enable/Disable	Pins 1-2 (Enabled)
JPL1/JPL2	LAN 1/2 Enable/Disable	Pins 1-2 (Enabled)
JPS1	SAS Controller Enable/Disable	Pins 1-2 (Enabled)
JPS2	SAS RAID Mode	On (Software RAID)
JPX1A/JPX1B	PCI-X Slot Frequency Selection	Open (Auto)
JWD	Watch Dog	Pins 1-2 (Reset)

LED	Description
LAN Ports	LEDs for the LAN Ethernet ports
Dedicated IPMI LAN	LEDs for the dedicated IPMI LAN Ethernet port
Power LED (DP4)	LED showing power connected for serverboard
IPMI LED (DP5)	LED showing IPMI connection

Connector	Description
COM1/COM2	COM1 Serial Port/Header
FAN 1-8	Chassis/CPU Fan Headers
Floppy	Floppy Disk Drive Connector
I-Button	I-Button Socket (for RAID 5 support)
IDE#1	IDE Disk Drive Connector
IPMI LAN	Dedicated IPMI LAN Port
JD1	Speaker Header
JF1	Front Panel Connector
JL1	Chassis Intrusion Header
JOH1	Overheat Warning Header
JPI2C	Power I ² C Header
JPW1	24-pin Main ATX Power Connector
JPW2/3	+12V 8-pin CPU Power Connectors
JWF1	Compact Flash Card Power Connector
JWOL	Wake-On-LAN Header
LAN1/2	Gigabit Ethernet (RJ45) Ports
PS2 Mouse/Keyboard	PS2 Mouse/Keyboard connectors
SMBus	System Management Bus Header
SAS0~3, SAS4~7	SAS Ports (for AS-2021A-32R+F only)
SATA0 ~ SATA5	SATA Ports
T-SGPIO-1	Serial General Purpose Input/Output Header
USB0/1, USB4/5, USB2/3	Universal Serial Bus (USB) Ports, Headers
VGA	VGA Connector

5-8 Connector Definitions

Power Connectors

A 24-pin main power supply connector(JPW1) and two 8-pin CPU PWR connectors (JPW2/JPW3) on the serverboard. These power connectors meet the SSI EPS 12V specification. In addition to the 24-pin ATX power connector, the 12V 8-pin CPU PWR connectors at JPW2/JPW3 must also be connected to your power supply. See the table on the right for pin definitions.

Warning: To prevent damage to the power supply or serverboard, please use a power supply that contains a 24-pin and two 8-pin power connectors. Be sure to connect these connectors to the 24-pin (JPW1) and the two 8-pin (JPW2,JPW3) power connectors on the serverboard. Failure in doing so will void the manufacturer warranty on your power supply and serverboard.

PW_ON Connector

The PW_ON connector is on pins 1 and 2 of JF1. This header should be connected to the chassis power button. See the table on the right for pin definitions.

Reset Connector

The reset connector is located on pins 3 and 4 of JF1 and attaches to the reset switch on the computer chassis. See the table on the right for pin definitions.

Overheat/Fan Fail LED (OH)

Connect an LED to the OH connection on pins 7 and 8 of JF1 to provide advanced warning of chassis overheating or fan failure. Refer to the table on the right for pin definitions and status indicators.

ATX Power 24-pin Connector Pin Definitions			
Pin#	Definition	Pin #	Definition
13	+3.3V	1	+3.3V
14	-12V	2	+3.3V
15	COM	3	COM
16	PS_ON	4	+5V
17	COM	5	COM
18	COM	6	+5V
19	COM	7	COM
20	Res (NC)	8	PWR_OK
21	+5V	9	5VSB
22	+5V	10	+12V
23	+5V	11	+12V
24	COM	12	+3.3V

12V 8-pin PWR Connector Pin Definitions	
Pins	Definition
1 through 4	Ground
5 through 8	+12V

(Required)

Power Button Pin Definitions (JF1)	
Pin#	Definition
1	PW_ON
2	Ground

Reset Button Pin Definitions (JF1)	
Pin#	Definition
3	Reset
4	Ground

OH/Fan Fail LED Pin Definitions (JF1)		OH/Fan Fail LED Status	
Pin#	Definition	State Indication	
7	Vcc	Solid	Overheat
8	Control	Blinking	Fan fail

NIC2 (LAN2) LED

The LED connections for LAN2 are on pins 9 and 10 of JF1. Attach LAN LED cables to display network activity. See the table on the right for pin definitions.

NIC2 LED Pin Definitions (JF1)	
Pin#	Definition
9	Vcc
10	Ground

NIC1 (LAN1) LED

The LED connections for LAN1 are on pins 11 and 12 of JF1. Attach LAN LED cables to display network activity. See the table on the right for pin definitions.

NIC1 LED Pin Definitions (JF1)	
Pin#	Definition
11	Vcc
12	Ground

HDD LED

The HDD LED connection is located on pins 13 and 14 of JF1. Attach the hard drive LED cable here to display disk activity (for any hard drives on the system, including SAS, Serial ATA and IDE). See the table on the right for pin definitions

HDD LED Pin Definitions (JF1)	
Pin#	Definition
13	Vcc
14	HD Active

Power On LED

The Power On LED connector is located on pins 15 and 16 of JF1. This connection is used to provide LED indication of power being supplied to the system. See the table on the right for pin definitions.

Power LED Pin Definitions (JF1)	
Pin#	Definition
15	5V Stby
16	Control

NMI Button

The non-maskable interrupt button header is located on pins 19 and 20 of JF1. Refer to the table on the right for pin definitions.

NMI Button Pin Definitions (JF1)	
Pin#	Definition
19	Control
20	Ground

LAN1/2 (Ethernet Ports)

Two Gigabit Ethernet ports (designated LAN1 and LAN2) are located beside the VGA port. Additionally, there is a dedicated LAN port for IPMI above the two rear USB ports. These Ethernet ports accept RJ45 type cables.



Universal Serial Bus Ports

Two Universal Serial Bus ports (USB 2.0) are located beside the Keyboard and Mouse PS2 ports. Two additional Type A ports (USB4/5) are included on the serverboard near the PCI Slot 1. See the table on the right for pin definitions.

USB Headers

Two USB 2.0 headers (USB2/3) are also included on the serverboard. These may be connected to provide front side access. A USB cable (not included) is needed for the connection. See the table on the right for pin definitions.

Fan Headers

This serverboard has eight fan headers (Fan1 to Fan8). These 4-pin fans headers are backward compatible with 3-pin fans. However, fan speed control is available for 4-pin fans only. The fan speeds are controlled by the BIOS. See the table on the right for pin definitions

Serial Ports

The COM1 serial port is located beside the VGA port. Refer to the serverboard layout for the location of the COM2 header. See the table on the right for pin definitions.

**Universal Serial Bus Ports
Pin Definitions (USB0/1,
USB4/5)**

USB0		USB1	
Pin #	Definition	Pin #	Definition
1	+5V	1	+5V
2	PO-	2	PO-
3	PO+	3	PO+
4	Ground	4	Ground

**Universal Serial Bus Headers
Pin Definitions (USB2/3)**

USB2		USB3	
Pin #	Definition	Pin #	Definition
1	+5V	1	+5V
2	PO-	2	PO-
3	PO+	3	PO+
4	Ground	4	Ground
5	Key	5	NC

Note: NC indicates no connection.

**Fan Header
Pin Definitions**

Pin#	Definition
1	Ground
2	+12V
3	Tachometer
4	PWR Modulation

**Serial Port Pin Definitions
(COM1/COM2)**

Pin #	Definition	Pin #	Definition
1	DCD	6	DSR
2	RXD	7	RTS
3	TXD	8	CTS
4	DTR	9	RI
5	Ground	10	NC

Note: NC indicates no connection.

SGPIO

The T-SGPIO1 (Serial General Purpose Input/Output) header provides a bus between the SATA controller and the backplane to provide SATA enclosure management functions. Connect the appropriate cable from the backplane to the T-SGPIO1 header to utilize SATA management functions on your system.

SGPIO Header Pin Definitions (T-SGPIO1)			
Pin#	Definition	Pin #	Definition
1	NC	2	NC
3	Ground	4	Data
5	Load	6	Ground
7	NC	8	NC

Note: NC indicates no connection.

SMBus Header

The header at SMBus is for the System Management Bus. Connect the appropriate cable here to utilize SMB on the system. See the table on the right for pin definitions.

SMBus Header Pin Definitions (SMBus)	
Pin#	Definition
1	Data
2	Ground
3	Clock
4	No Connection

Wake-On-LAN

The Wake-On-LAN header is designated JWOL. See the table on the right for pin definitions. You must have a LAN card with a Wake-On-LAN connector and cable to use the Wake-On-LAN feature.

Wake-On-LAN Pin Definitions (JWOL)	
Pin#	Definition
1	+5V Standby
2	Ground
3	Wake-up

Power I2C

The JPI2C header is for power I²C, which may be used to monitor the status of the power supply, fan and system temperature. See the table on the right for pin definitions.

Power I ² C Pin Definitions (JPI2C)	
Pin#	Definition
1	Data
2	Ground
3	Clock
4	NC

Overheat LED

Connect an LED to the JOH1 header to provide warning of chassis overheating. See the table on the right for pin definitions.

Overheat LED Pin Definitions (JOH1)	
Pin#	Definition
1	3.3V
2	OH Active

Chassis Intrusion

A Chassis Intrusion header is located at JL1. Attach the appropriate cable to inform you of a chassis intrusion.

Chassis Intrusion Pin Definitions (JL1)

Pin#	Definition
1	Battery voltage
2	Intrusion signal

Power LED/Speaker

On the JD1 header, pins 1~3 are used for power LED indication, and pins 4~7 are for the speaker. See the tables on the right for pin definitions. If you wish to use the onboard speaker, you should close pins 6~7 with a jumper. Connect a cable to pins 4~7 of JD1 to use an external speaker.

PWR LED Connector Pin Definitions

Pin Setting	Definition
Pin 1	Anode (+)
Pin2	Cathode (-)
Pin3	NA

Speaker Connector Pin Definitions

Pin Setting	Definition
Pins 4~7	External Speaker
Pins 6~7	Internal Speaker

ATX PS/2 Keyboard and PS/2 Mouse Ports

The ATX PS/2 keyboard and PS/2 mouse are located next to the Back Panel USB Ports 0~3 on the serverboard. See the table at right for pin definitions.

PS/2 Keyboard/Mouse Pin Definitions

PS2 Keyboard		PS2 Mouse	
Pin#	Definition	Pin#	Definition
1	KB Data	1	Mouse Data
2	No Connection	2	No Connection
3	Ground	3	Ground
4	Mouse/KB VCC (+5V)	4	Mouse/KB VCC (+5V)
5	KB Clock	5	Mouse Clock
6	No Connection	6	No Connection
VCC: with 1.5A PTC (current limit)			

I-Button

The I-Button, located near the floppy connector, is a computer chip enclosed in a durable stainless container to enable RAID 5 under Software RAID mode. See the table on the right for pin definitions.

I-Button Pin Definitions

Pin#	Definition
1	Ground
2	GPIO1
3	Ground

Compact Flash Card PWR Connector

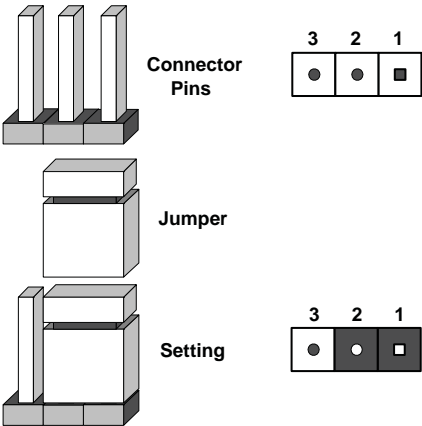
A Compact Flash Card Power Connector is located at JWF1. For the Compact Flash Card to work properly, you will need to enable it with the JCF1 jumper and connect a Compact Flash Card power cable to JWF1 first.

Compact Flash Card PWR Connector	
Jumper	Definition
On	Compact Flash Power On (Default)
Off	Compact Flash Power Off

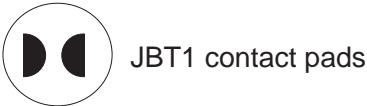
5-9 Jumper Settings

Explanation of Jumpers

To modify the operation of the serverboard, jumpers can be used to choose between optional settings. Jumpers create shorts between two pins to change the function of the connector. Pin 1 is identified with a square solder pad on the printed circuit board. See the diagram at right for an example of jumping pins 1 and 2. Refer to the serverboard layout page for jumper locations.



Note: On two-pin jumpers, "Closed" means the jumper is on and "Open" means the jumper is off the pins.



CMOS Clear

JBT1 is used to clear CMOS, which will also clear any passwords. Instead of pins, this jumper consists of contact pads to prevent accidentally clearing the contents of CMOS.

To Clear CMOS

1. First power down the system and unplug the power cord(s).
2. With the power disconnected, short the CMOS pads with a metal object such as a small screwdriver.
3. Remove the screwdriver (or shorting device).
4. Reconnect the power cord(s) and power on the system.

Note: Do not use the PW ON connector to clear CMOS.

I²C to PCI-Express Slot

JI²C1/JI²C2 allows you to enable the I²C bus to communicate with the PCI-Express slot. For the jumpers to work properly, please set both jumpers to the same setting. If enabled, both jumpers must be enabled. If disabled, both jumpers must be disabled. See the table on the right for jumper settings.

I ² C to PCI-Express Slot Jumper Settings (JPI2C1/JPI2C2)	
Jumper Setting	Definition
Closed	Enabled
Open	Disabled

Watch Dog Enable/Disable

JWD enables the Watch Dog function, a system monitor that takes action when a software application freezes the system. Jumping pins 1-2 will have WD reboot the system if a program freezes. Jumping pins 2-3 will generate a non-maskable interrupt for the program that has frozen. See the table on the right for jumper settings. Watch Dog must also be enabled in BIOS.

Watch Dog Jumper Settings (JWD)	
Jumper Setting	Definition
Pins 1-2	Reset
Pins 2-3	NMI
Open	Disabled

Note: when Watch Dog is enabled, the user must write their own application software to disable the Watch Dog Timer.

PCI-X Slot Frequency Selection

JPX1A (PCI-X Slot 1) and JPX1B (PCI-X Slot 2) are used for specifying the frequency setting for cards installed in the appropriate PCI-X slot. This jumper allows you to specify a slower speed for legacy cards installed in one of these slots. Leaving the jumper open allows automatic use of high speed cards. Closing the pins specifies the use of slower speed PCI or PCI-X cards.

PCI-X Slot Frequency Selection Jumper Settings (JPX1A/JPX1B)	
Jumper Setting	Definition
Pins 1-2	PCI-X 66 Mhz
Pins 2-3	PCI 66 Mhz
Open	Auto

VGA Enable/Disable

JPG1 allows you to enable or disable the VGA port. The default position is on pins 1 and 2 to enable VGA. See the table on the right for jumper settings.

VGA Enable/Disable Jumper Settings (JPG1)	
Jumper Setting	Definition
Pins 1-2	Enabled
Pins 2-3	Disabled

LAN1/2 Enable/Disable

Change the setting of jumper JPL1 and JPL2 to enable or disable the LAN1 and LAN2 Ethernet ports, respectively. See the table on the right for jumper settings. The default setting is enabled.

LAN1/2 En/Disable Jumper Settings (JPL1/JPL2)	
Jumper Setting	Definition
Pins 1-2	Enabled
Pins 2-3	Disabled

Compact Flash Master/Slave Select

A Compact Flash Master (Primary)/Slave (Secondary) Select Jumper is located at JCF1. Close this jumper to enable Compact Flash Card. For the Compact Flash Card or the Compact Flash Jumper (JCF1) to work properly, you will need to connect the Compact Flash Card power cable to JWF1 first. Refer to the board layout below for the location.

Compact Flash Card Master/Slave Select (JCF1)	
Jumper Setting	Definition
Open	Slave (Secondary)
Closed	Master (Primary)

SAS Enable/Disable

JPS1 allows you to enable or disable the SAS controller. The default position is on pins 1 and 2 to enable SAS. See the table on the right for jumper settings.

SAS Enable/Disable Jumper Settings (JPS1)	
Jumper Setting	Definition
Pins 1-2	Enabled
Pins 2-3	Disabled

SAS RAID Mode Select

JPS2 allows you to select the SAS RAID mode, either Software RAID or IT Mode. Close this jumper to use Software RAID (the default setting). Set this jumper to open to use the IT Mode.

Software RAID Jumper Settings (JPS2)	
Jumper Setting	Definition
Close	Software RAID Enabled
Open	IT Mode Enabled

SAS RAID Select

JPS1 allows you to select between SR RAID, which is the default and enables SAS RAID, or IT RAID, which treats SAS drives as non-RAID drive and requires a firmware flash. See the table on the right for jumper settings and Section 5-13, Flashing IT Firmware for the IT firmware flash procedure.

Software RAID Jumper Settings (JPS2)	
Jumper Setting	Definition
Close	IT RAID
Open	SR RAID

Note: SR=Software RAID, IT=Integrate Target mode. IR RAID is not supported.

5-10 Onboard Indicators

LAN1/LAN2 LEDs

The Ethernet ports (located beside the VGA port) have two LEDs. On each Gb LAN port, one LED blinks to indicate activity while the other may be green, amber or off to indicate the speed of the connection. See the table on the right for the functions associated with the connection speed LED.

LAN LED (Connection Speed Indicator)	
LED Color	Definition
Off	10 Mb/s
Green	100 Mb/s
Amber	1 Gb/s

Dedicated IPMI LAN LEDs

A dedicated IPMI LAN is also included on the H8Dlx Series Serverboard. The amber LED on the right indicates activity, while the green LED on the left indicates the speed of the connection. See the table at right for more information.

IPMI LAN Link LED (Left) & Activity LED (Right)		
Color	Status	Definition
Link (Left)	Green: Solid	100 Mb/s
Activity (Right)	Amber: Blinking	Active

Power LED

The DP4 Power LED is located near FAN4. When this LED is lit, it means power is present on the serverboard. Be sure to turn off the system and unplug the power cord(s) before removing or installing components.

Power LED (DP4)	
State	System Status
On	Standby power present on serverboard
Off	No power connected

IPMI LED

The serverboard contains an IPMI LED (DP5) located near the corner above the PCI-X slots. When this LED is lit, it means a connection is active for the built-in IPMI on the serverboard.

Note: This LED is not installed on non-IPMI boards.

IPMI LED (DP5)	
State	System Status
On	Active connection
Off	No connection

5-11 Floppy, IDE, SAS and SATA Drive Connections

Use the following information to connect the IDE hard disk drive cables.

- A red mark on a wire typically designates the location of pin 1.
- The 80-wire ATA100/66 IDE hard disk drive cable that came with your system has two connectors to support two drives. This special cable should be used to take advantage of the speed this new technology offers. The blue connector connects to the onboard IDE connector interface and the other connector(s) to your hard drive(s). Consult the documentation that came with your disk drive for details on actual jumper locations and settings for the hard disk drive.

IDE Connectors

There are two IDE connectors (one blue and one white) on the serverboard. IDE#1 (blue) is designated as the Primary IDE drive. The white connector is designated as the Secondary IDE drive and is reserved for Compact Flash Card use only. (See the note below.) See the table on the right for pin definitions.

Note: The white slot is reserved for Compact Flash Cards only. Do not use it for other devices. If populated with a Compact Flash Card, IDE#1 (the blue slot) will be available for one device only. For the Compact Flash Card to work properly, you will first need to enable with JCF1 and connect a power cable to JWF1.

IDE Drive Connector Pin Definitions (IDE#1)			
Pin#	Definition	Pin #	Definition
1	Reset IDE	2	Ground
3	Host Data 7	4	Host Data 8
5	Host Data 6	6	Host Data 9
7	Host Data 5	8	Host Data 10
9	Host Data 4	10	Host Data 11
11	Host Data 3	12	Host Data 12
13	Host Data 2	14	Host Data 13
15	Host Data 1	16	Host Data 14
17	Host Data 0	18	Host Data 15
19	Ground	20	Key
21	DRQ3	22	Ground
23	I/O Write	24	Ground
25	I/O Read	26	Ground
27	IOCHRDY	28	BALE
29	DACK3	30	Ground
31	IRQ14	32	IOCS16
33	Addr1	34	Ground
35	Addr0	36	Addr2
37	Chip Select 0	38	Chip Select 1
39	Activity	40	Ground

Floppy Drive Connector

The floppy connector is located at J17. See the table on the right for pin definitions.

Floppy Drive Connector Pin Definitions (J17)			
Pin#	Definition	Pin #	Definition
1	Ground	2	FDHDIN
3	Ground	4	Reserved
5	Key	6	FDEDIN
7	Ground	8	Index
9	Ground	10	Motor Enable
11	Ground	12	Drive Select B
13	Ground	14	Drive Select B
15	Ground	16	Motor Enable
17	Ground	18	DIR
19	Ground	20	STEP
21	Ground	22	Write Data
23	Ground	24	Write Gate
25	Ground	26	Track 00
27	Ground	28	Write Protect
29	Ground	30	Read Data
31	Ground	32	Side 1 Select
33	Ground	34	Diskette

SATA Ports

There are no jumpers to configure the SATA ports, which are designated SATA0 through SATA5. See the table on the right for pin definitions.

SATA Ports Pin Definitions (SATA0-SATA3)	
Pin #	Definition
1	Ground
2	TXP
3	TXN
4	Ground
5	RXN
6	RXP
7	Ground

SAS Ports (AS-2021A-32R+F Only)

There are eight SAS ports included on the serverboard. See the table on the right for pin definitions.

Note: JPS1 must be set correctly to enable the SAS controller.

SAS Ports Pin Definitions (SAS0 ~ SAS7)			
Pin#	Definition	Pin #	Definition
1	Ground	2	TXP
3	TXN	4	Ground
5	RXN	6	RXP
7	Ground		

5-12 Enabling SATA RAID

Now that the hardware is set up, you must install the operating system and the SATA RAID drivers, if you wish to use RAID with your SATA drives. The installation procedure differs depending on whether you wish to have the operating system installed on a RAID array or on a separate non-RAID drive. See the instructions below for details.

Serial ATA (SATA)

Serial ATA (SATA) is a physical storage interface that employs a single cable with a minimum of four wires to create a point-to-point connection between devices. This connection is a serial link that supports a SATA transfer rate from 150 MBps. The serial cables used in SATA are thinner than the traditional cables used in Parallel ATA (PATA) and can extend up to one meter in length, compared to only 40 cm for PATA cables. Overall, SATA provides better functionality than PATA.

Installing the OS/SATA Driver

Before installing the OS (operating system) and SATA RAID driver, you must decide if you wish to have the operating system installed as part of a bootable RAID array or installed to a separate non-RAID hard drive. If on a separate drive, you may install the driver either during or after the OS installation. If you wish to have the OS on a SATA RAID array, you must follow the procedure below and install the driver during the OS installation.

Building a Driver Diskette

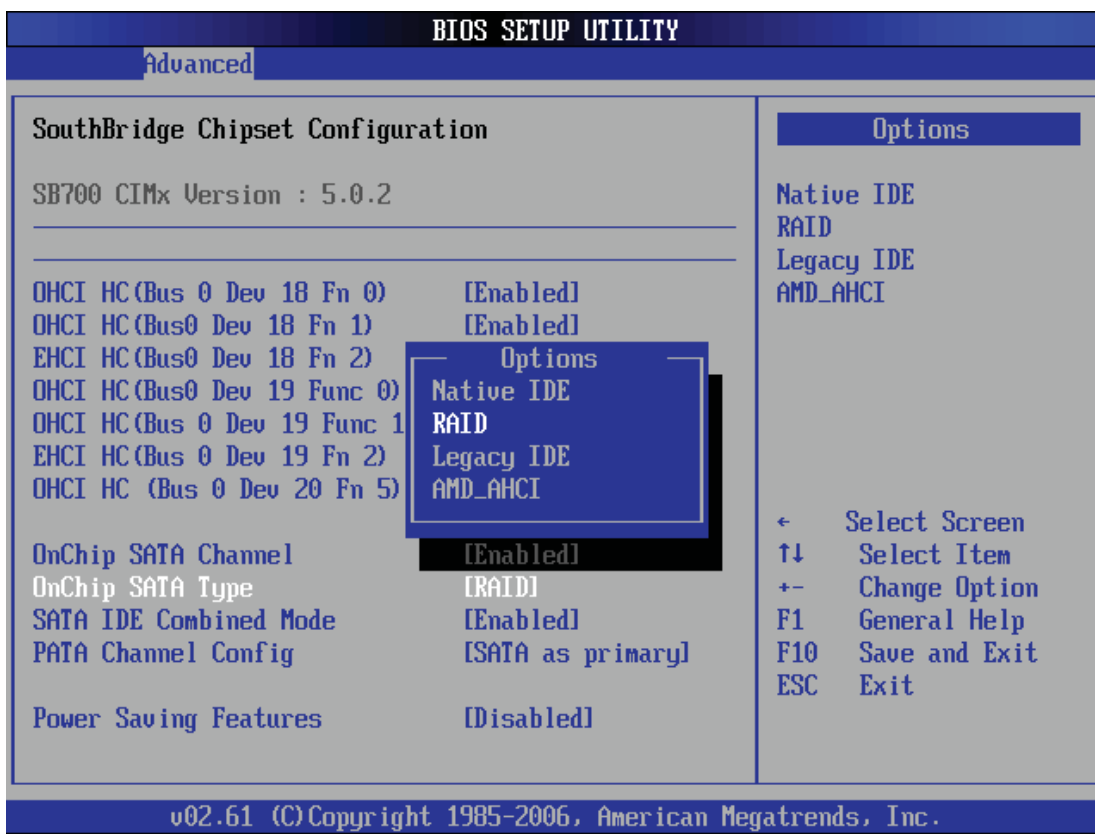
You must first build a driver diskette from the Supermicro CD-ROM that was included with the system. (You will have to create this disk on a computer that is already running and with the OS installed.) Insert the CD into your CD-ROM drive and start the system. A display as shown in Figure 5-7 will appear. Click on the icon labeled "Build Driver Diskettes and Manuals" and follow the instructions to create a floppy disk with the driver on it. Once it's been created, remove the floppy and insert the installation CD for the Windows Operating System you wish to install into the CD-ROM drive of the new system you are about to configure.

Enabling SATA RAID in the BIOS

Before installing the Windows Operating System, you must change some settings in BIOS. Boot up the system and hit the key to enter the BIOS Setup Utility. After the Setup Utility loads,

1. Use the arrow keys to move to the Exit menu. Scroll down with the arrow keys to the "Load Optimal Defaults" setting and press <Enter>. Select "OK" to confirm, then <Enter> to load the default settings.
2. Use the arrow keys to move to the "Advanced" menu, then scroll down to "Chipset Configuration". Next enter "SouthBridge Configuration" and press the <Enter> key. Once in this submenu, scroll down to "OnChip SATA Type" and choose the "RAID" option (see Figure 5-5).

Figure 5-5. BIOS Setup Screen



3. Hit the <Esc> key twice and scroll to the Exit menu. Select "Save Changes and Exit" and hit <enter>, then hit <Enter> again to verify.
4. After exiting the BIOS Setup Utility, the system will reboot. When prompted during the startup, press the <CTRL+A> key when prompted to run the Dot-Hill RAID Utility program (see Figure 5-6).

Using the Adaptec RAID Utility

The Adaptec® RAID Utility program is where you can define the drives you want to include in the RAID array and the mode and type of RAID.

Figure 5-6. Adaptec RAID Utility Program Screen



Installing the RAID Driver During OS Installation

You may also use the procedure below to install the RAID driver during the Window's OS installation:

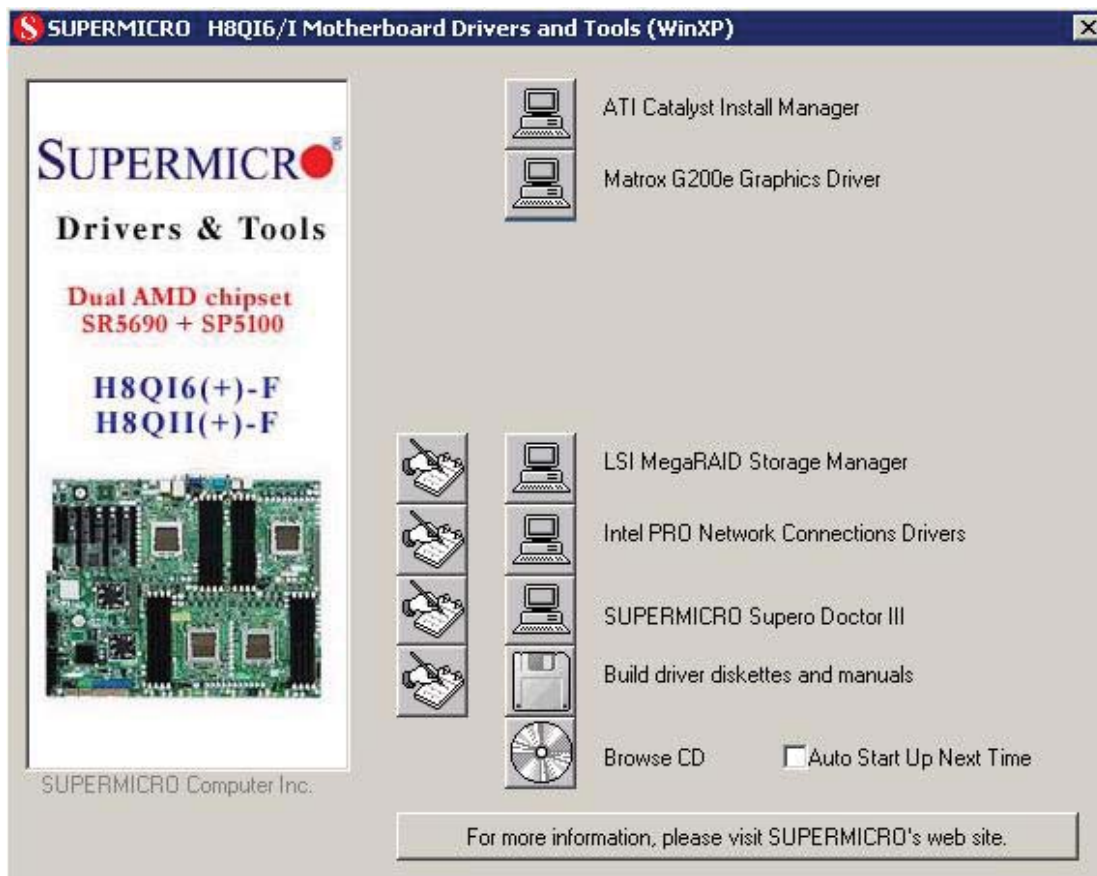
1. With the Windows OS installation CD in the CD-ROM drive, restart the system.
2. When you see the prompt, hit the <F6> key to enter Windows setup.
3. Eventually a blue screen will appear with a message that begins "Windows could not determine the type of one or more storage devices . . ." When you see the screen, hit the <S> key to "Specify Additional Device", then insert the driver diskette you just created into the floppy drive.
4. Highlight "Manufacturer Supplied Hardware Support Disk" and hit the <Enter> key.
5. Highlight the first "Adaptec RAID" driver shown and press the <Enter> key to install it.
6. Press <Enter> again to continue with the Windows setup.

5-13 Installing Drivers

The CD that came bundled with the system contains drivers, some of which must be installed, such as the chipset driver. After inserting this CD into your CD-ROM drive, the display shown in Figure 5-7 should appear. (If this display does not appear, click on the My Computer icon and then on the icon representing your CD-ROM drive. Finally, double click on the S "Setup" icon.)

Click the icons showing a hand writing on paper to view the readme files for each item. Click the computer icons to the right of these items to install each item (from top to the bottom) one at a time. After installing each item, you should reboot the system before moving on to the next item on the list. The bottom icon with a CD on it allows you to view the entire contents of the CD.

Figure 5-7. Driver/Tool Installation Display Screen



Supero Doctor III

The Supero Doctor III program is a Web base management tool that supports remote management capability. It includes Remote and Local Management tools. The local management is called SD III Client. The Supero Doctor III program included on the CD-ROM that came with your motherboard allows you to monitor the environment and operations of your system. Supero Doctor III displays crucial system information such as CPU temperature, system voltages and fan status. See the Figure below for a display of the Supero Doctor III interface.

Note: The default User Name and Password for SuperDoctor III is ADMIN / ADMIN.

Note: When SuperDoctor III is first installed, it adopts the temperature threshold settings that have been set in BIOS. Any subsequent changes to these thresholds must be made within Super Doctor, as the Super Doctor settings override the BIOS settings. To set the BIOS temperature threshold settings again, you would first need to uninstall SuperDoctor III.

Figure 5-8. Supero Doctor III Interface Display Screen (Health Information)

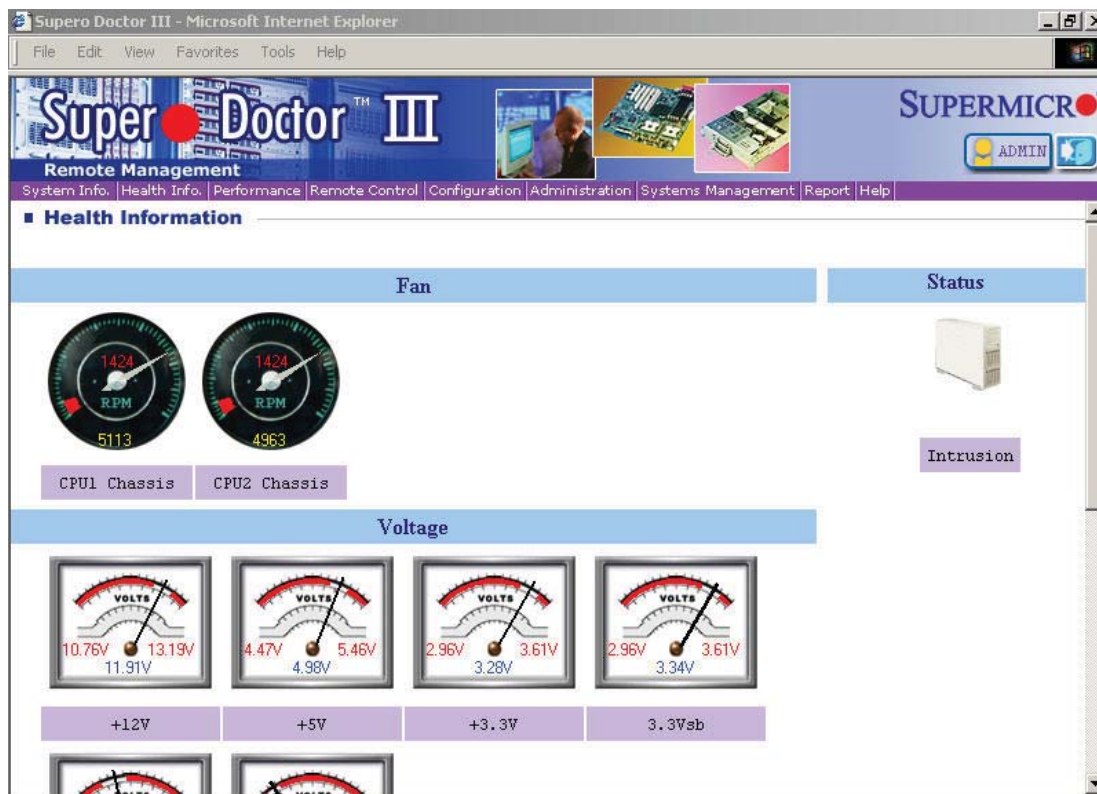


Figure 5-9. Supero Doctor III Interface Display Screen (Remote Control)



Note: Super Doctor III Software Revision 1.0 can be downloaded from our Web Site at: ftp://ftp.supermicro.com/utility/Supero_Doctor_III/. You can also download the Super Doctor III User's Guide at: <http://www.supermicro.com/PRODUCT/Manuals/SDIII/UserGuide.pdf>. For Linux, we recommend that you use the Supero Doctor II application instead.

5-14 Flashing IT Firmware

Use the following procedure below for flashing IT firmware.

Flashing IT Firmware

1. Download the appropriate IT firmware from the web site:
<ftp://ftp.supermicro.com/driver/SAS/LSI/Firmware/IT/>
2. Unzip it to a bootable floppy or USP pen drive.
3. With JPS1 closed boot to the device with the unzipped firmware and type "clear" to erase the SR firmware.
4. Remove the AC power and open JPS1.
5. Boot to the disk again and type "H8DM32"
6. When prompted for the SAS address, type in the 16-digit SAS address labeled on the board.
7. Power off the system before restarting.

Chapter 6

Advanced Chassis Setup

This chapter covers the steps required to install components and perform maintenance on the SC825TQ-R720LPB chassis. For component installation, follow the steps in the order given to eliminate the most common problems encountered. If some steps are unnecessary, skip ahead to the step that follows.

Tools Required: The only tool you will need to install components and perform maintenance is a Philips screwdriver.

6-1 Static-Sensitive Devices

Electrostatic discharge (ESD) can damage electronic components. To prevent damage to any printed circuit boards (PCBs), it is important to handle them very carefully. The following measures are generally sufficient to protect your equipment from ESD damage.

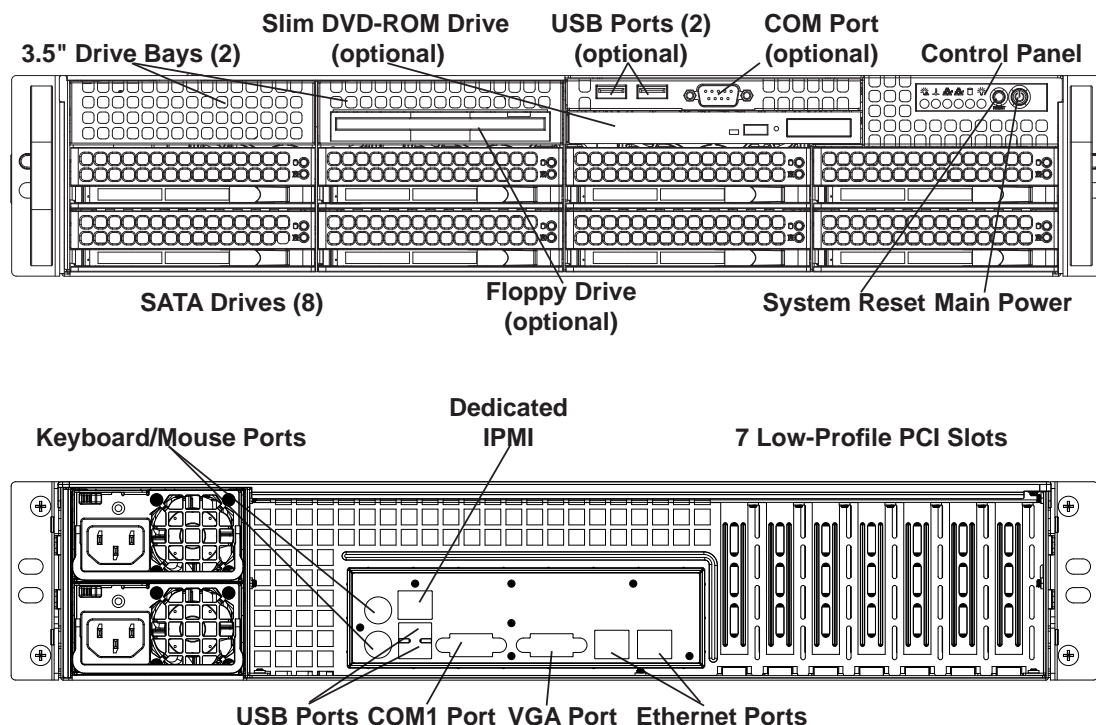
Precautions

- Use a grounded wrist strap designed to prevent static discharge.
- Touch a grounded metal object before removing any board from its antistatic bag.
- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the serverboard, add-on cards and peripherals back into their antistatic bags when not in use.
- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the serverboard.

Unpacking

The serverboard is shipped in antistatic packaging to avoid static damage. When unpacking the board, make sure the person handling it is static protected.

Figure 6-1. Front and Rear Chassis Views



6-2 Control Panel

The control panel (located on the front of the chassis) must be connected to the JF1 connector on the serverboard to provide you with system status indications. A ribbon cable has bundled these wires together to simplify the connection. Connect the cable from JF1 on the serverboard to the Control Panel PCB (printed circuit board). Make sure the red wire plugs into pin 1 on both connectors. Pull all excess cabling out of the airflow path. The LEDs inform you of system status.

See Chapter 3 for details on the LEDs and the control panel buttons. Details on JF1 can be found in Chapter 5.

6-3 System Fans

Three 8-cm hot-swap fans provide the cooling for the system. It is very important that the chassis top cover is properly installed and making a good seal in order for the cooling air to circulate properly through the chassis and cool the components. See Figure 6-2.

System Fan Failure

Fan speed is controlled by system temperature via a BIOS setting. If a fan fails, the remaining fans will ramp up to full speed and the overheat/fan fail LED on the control panel will turn on. Replace any failed fan at your earliest convenience with the same type and model (the system can continue to run with a failed fan). Remove the top chassis cover while the system is still running to determine which of the fans has failed.

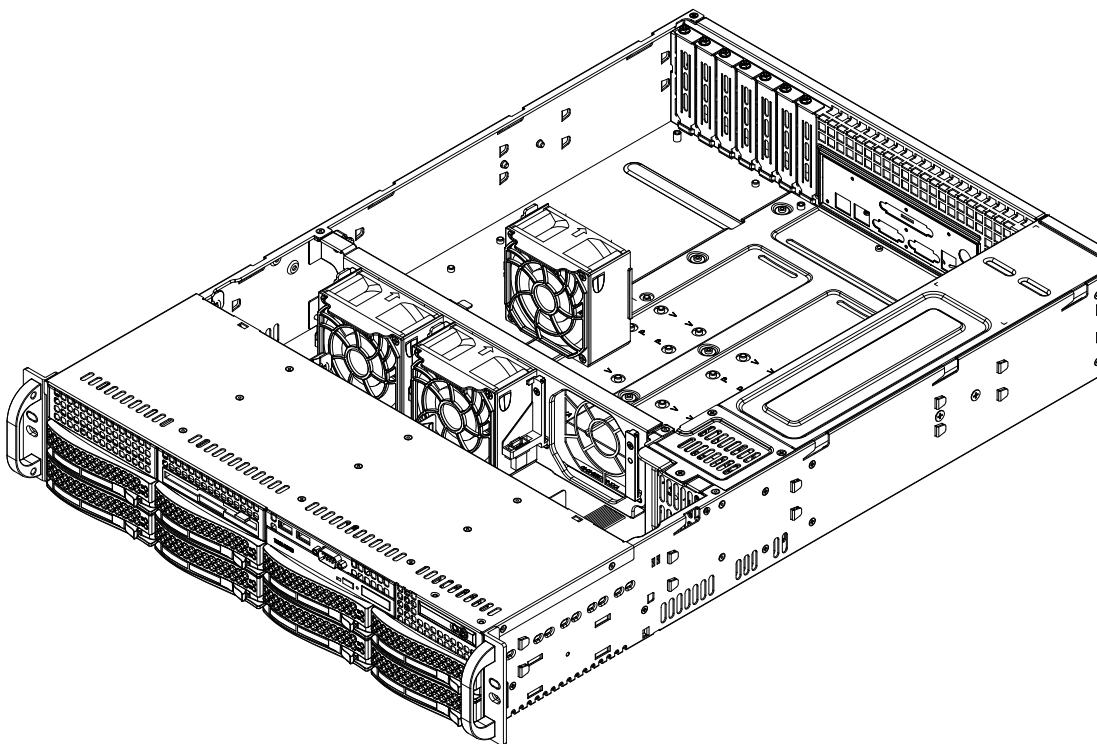
Replacing System Fans

Removing a Fan

1. Remove the chassis cover.
2. Press the tabs on the sides of the fan to unlock and remove the fan and its housing. The fan's power connections will automatically detach.
3. System power does not need to be shut down since the fans are hot-pluggable.

Installing a New Fan

1. Replace the failed fan with an identical 8-cm, 12 volt fan (available from Supermicro, p/n FAN-0094L4).
2. Position the new fan into the space vacated by the failed fan previously removed. A "click" can be heard when the fan is fully installed in place and the power connections are made.
3. If the system power is on, the hot-plug feature will cause the fan to start immediately upon being connected to its header on the serverboard.

Figure 6-2. Removing System Cooling Fans

6-4 Drive Bay Installation/Removal

Accessing the Drive Bays

SAS/SATA Drives: You do not need to access the inside of the chassis or remove power to replace or swap SAS/SATA drives. Proceed to the next step for instructions.

Note: You must use standard 1" high, SAS/SATA drives in the system.

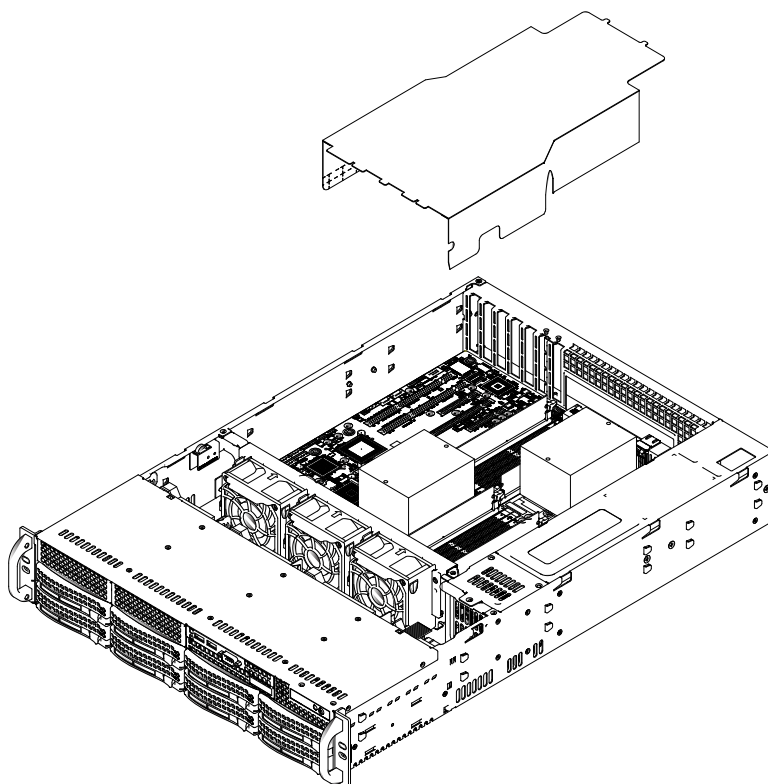
DVD-ROM/Floppy Disk Drive: For installing/removing the DVD-ROM or floppy disk drive, you will need to gain access to the inside of the server by removing the top cover of the chassis. Proceed to the "DVD-ROM and Floppy Drive Installation" section later in this chapter for instructions.

Installing the Air Shroud

Under most circumstances you will not need to remove the air shroud to perform any service on the system. However, you may temporarily remove it if necessary (the air shroud should always be in place when the system is operating).

1. To install, slide the air shroud's front lip into the groove located behind the row of system fans. Make sure the air shroud cut-out aligns with the fan post.
2. Hook the bottom side flaps of the air shroud to the rear fan chassis screw.
3. Pull the rear edges of the shroud outward and slide the heatsink flaps under the heatsink to further secure the air shroud.

Figure 6-4. Installing the Air Shroud



SATA Drive Installation

The SATA drives are mounted in drive carriers to simplify their installation and removal from the chassis. These carriers also help promote proper airflow for the drives. For this reason, even empty carriers without hard drives installed must remain in the chassis.

Mounting a SATA Drive in a Drive Carrier

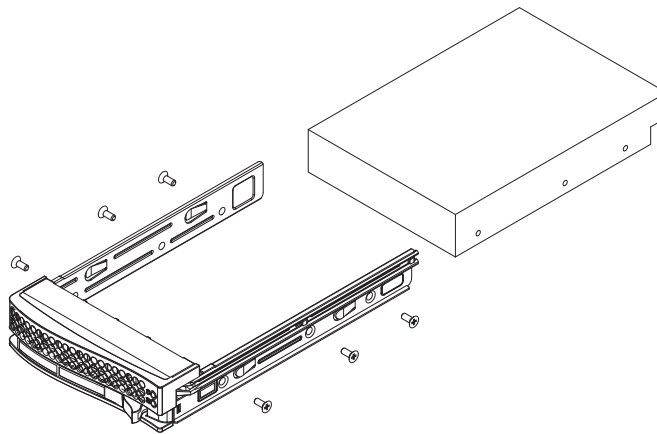
1. To add a new SATA drive, install the drive into the carrier with the printed circuit board side facing down so that the mounting holes align with those in the carrier.
2. Secure the drive to the carrier with four screws, as shown in Figure 6-3.

Installing/Removing Hot-swap SATA Drives

1. Push the release button located beside the drive's LEDs.
2. Swing the handle fully out and use it to pull the drive carrier straight out (see Figure 6-4).

Note: Your OS must have RAID support to enable the hot-plug capability of the drives.

Figure 6-3. Mounting a SATA Drive in a Carrier

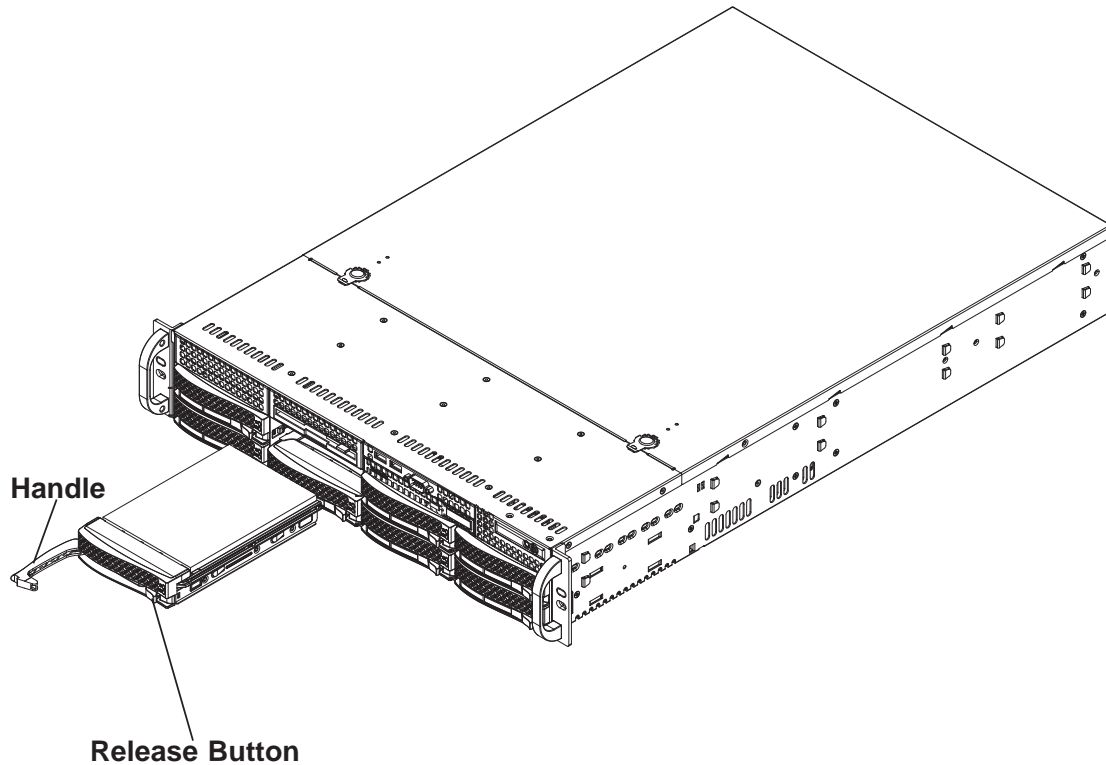


Use caution when working around the SATA backplane. Do not touch the backplane with any metal objects and make sure no ribbon cables touch the backplane or obstruct the holes, which aid in proper airflow.



Important: Regardless of how many hard drives are installed, all drive carriers must remain in the drive bays to maintain proper airflow.

Figure 6-4. Removing a SATA Drive Carrier



Important: All of the drive carriers must remain in the drive bays to maintain proper cooling airflow.

Hard Drive Backplane

The hard drives plug into a backplane that provides power, drive ID and bus termination. A RAID controller can be used with the backplane to provide data security. The operating system you use must have RAID support to enable the hot-swap capability of the hard drives. The backplane is already preconfigured, so no jumper or switch configurations are required.

DVD-ROM and Floppy Drive Installation

The top cover of the chassis must be opened to gain full access to the DVD-ROM and floppy drive bays. The AS-2021A-T2R+F/32R+F accommodates only slim type DVD-ROM drives. Side mounting brackets are typically needed to mount a slim DVD-ROM drive in the server.

Accessing the Inside of the Chassis

1. Grasp the two handles on either side and pull the unit straight out until it locks (you will hear a "click").
2. Next, depress the two buttons on the top of the chassis to release the top cover and at the same time, push the cover away from you until it stops. You can then lift the top cover from the chassis to gain full access to the inside of the server. **Note:** You must power down the system before installing or removing floppy or IDE components.

Drives mount on rails and should "click" into place to be correctly and fully installed in their bays.

- The floppy disk drive cable has seven twisted wires.
- A color mark on a cable typically designates the location of pin 1.
- A single floppy disk drive ribbon cable has 34 wires and two connectors to provide for two floppy disk drives. The connector with twisted wires always connects to drive A, and the connector that does not have twisted wires always connects to drive B.

6-5 Power Supply

The SuperServer AS-2021A-T2R+F/32R+F has a 720 watt redundant power supply consisting of two power modules. Each power supply module has an auto-switching capability, which enables it to automatically sense and operate at a 100V - 240V input voltage.

Power Supply Failure

If either of the two power supply modules fail, the other module will take the full load and allow the system to continue operation without interruption. The PWR Fail LED will illuminate and remain on until the failed unit has been replaced. Replacement units can be ordered directly from Supermicro (see contact information in the Preface). The power supply units have a hot-swap capability, meaning you can replace the failed unit without powering down the system.

Removing/Replacing the Power Supply

You do not need to shut down the system to replace a power supply unit. The backup power supply module will keep the system up and running while you replace the failed hot-swap unit. Replace with the same model (see part number in the Appendix), which can be ordered directly from Supermicro.

Removing the Power Supply

1. First unplug the AC power cord from the failed power supply module.
2. Depress the locking tab on the power supply module.
3. Use the handle to pull it straight out with the rounded handle.

Installing a New Power Supply

1. Replace the failed hot-swap unit with another identical power supply unit.
2. Push the new power supply unit into the power bay until you hear a click.
3. Secure the locking tab on the unit.
4. Finish by plugging the AC power cord back into the unit.

Notes

Chapter 7

BIOS

7-1 Introduction

This chapter describes the AMIBIOS™ Setup utility for the H8Dlx Series Serverboard. The AMI ROM BIOS is stored in a flash chip and can be easily upgraded using a floppy disk-based program.

Note: Due to periodic changes to the BIOS, some settings may have been added or deleted and might not yet be recorded in this manual. Please refer to the Manual Download area of our web site for any changes to BIOS that may not be reflected in this manual.

Starting BIOS Setup Utility

To enter the BIOS Setup Utility, hit the <Delete> key while the system is booting-up. (In most cases, the <Delete> key is used to invoke the BIOS setup screen. There are a few cases when other keys are used, such as <F1>, <F2>, etc.) Each main BIOS menu option is described in this manual.

The Main BIOS screen has two main frames. The left frame displays all the options that can be configured. "Grayed-out" options cannot be configured. The right frame displays the key legend. Above the key legend is an area reserved for a text message. When an option is selected in the left frame, it is highlighted in white. Often a text message will accompany it. (Note that BIOS has default text messages built in. We retain the option to include, omit, or change any of these text messages.) Settings printed in **Bold** are the default values.

A " ►" indicates a submenu. Highlighting such an item and pressing the <Enter> key will open the list of settings within that submenu.

The BIOS setup utility uses a key-based navigation system called hot keys. Most of these hot keys (<F1>, <F10>, <Enter>, <ESC>, <Arrow> keys, etc.) can be used at any time during the setup navigation process.

Note: Options printed in **Bold** are default settings.

How To Change the Configuration Data

The configuration data that determines the system parameters may be changed by entering the AMI BIOS Setup utility. This Setup utility can be accessed by pressing at the appropriate time during system boot.

Starting the Setup Utility

Normally, the only visible Power-On Self-Test (POST) routine is the memory test. As the memory is being tested, press the <Delete> key to enter the main menu of the AMI BIOS Setup Utility. From the main menu, you can access the other setup screens. An AMI BIOS identification string is displayed at the left bottom corner of the screen below the copyright message.



Warning! Do not upgrade the BIOS unless your system has a BIOS-related issue. Flashing the wrong BIOS can cause irreparable damage to the system. In no event shall Supermicro be liable for direct, indirect, special, incidental, or consequential damages arising from a BIOS update. If you have to update the BIOS, do not shut down or reset the system while the BIOS is updating. This is to avoid possible boot failure.

7-2 Main Setup

When you first enter the AMI BIOS Setup Utility, you will enter the Main setup screen. You can always return to the Main setup screen by selecting the Main tab on the top of the screen. The Main BIOS Setup screen is shown below.

System Overview

The following BIOS information will be displayed:

System Time/System Date

Use this option to change the system time and date. Highlight *System Time* or *System Date* using the arrow keys. Key in new values through the keyboard and press <Enter>. Press the <Tab> key to move between fields. The date must be entered in Day MM/DD/YY format. The time is entered in HH:MM:SS format. (**Note:** The time is in the 24-hour format. For example, 5:30 P.M. appears as 17:30:00.)

Supermicro H8Dli+-F/H8DI3+-F

- **BIOS Build Version:** This item displays the BIOS revision used in your system.
- **BIOS Build Date:** This item displays the date when this BIOS was completed.
- **AMI BIOS Core Version:** This item displays the revision number of the AMI BIOS Core upon which your BIOS was built.

Processor

The AMI BIOS will automatically display the status of the processor used in your system:

- **CPU Type:** This item displays the type of CPU used in the motherboard.
- **Speed:** This item displays the speed of the CPU detected by the BIOS.
- **Physical Count:** This item displays the number of processors installed in your system as detected by the BIOS.
- **Logical Count:** This item displays the number of CPU Cores installed in your system as detected by the BIOS.
- **Micro_code Revision:** This item displays the revision number of the BIOS Micro_code used in your system.

System Memory

This displays the size of memory available in the system:

- **Size:** This item displays the memory size detected by the BIOS.

4-3 Advanced Settings Menu

► Boot Feature

Quick Boot

If Enabled, this option will skip certain tests during POST to reduce the time needed for the system to boot up. The options are **Enabled** and Disabled.

Quiet Boot

If Disabled, normal POST messages will be displayed on boot-up. If **Enabled**, this display the OEM logo instead of POST messages.

Add-on ROM Display Mode

Use this setting to set the display mode for Option ROM in the system. Options include **Force BIOS** and Keep Current.

Bootup Num-Lock

This setting allows you to select the power-on state for the Numlock. Options include **On** and Off.

PS/2 Mouse Support

Use this setting to select support for the PS/2 Mouse. Options include **Auto**, Disabled and Enabled.

Wait for F1 if Error

This setting controls the system response when an error is detected during the boot sequence. When enabled, BIOS will stop the boot sequence when an error is detected, at which point you will need to press the F1 button to re-enter the BIOS setup menu. The options are **Enabled** and Disabled.

Hit DEL Message Display

Enabling this setting displays the "Press Del to Run Setup" message in POST. Options include **Enabled** and Disabled.

Watch Dog Mode

This setting allows you to set the system to restart when it is not active. Options include **Disabled**, Enabled and More than 5-minutes.

Power Button Mode

This setting allows you to select the power button functionality. Options include **Instant Off** and 4-seconds Override.

Restore on AC Power Loss

If the system loses power, this setting allows you to specify the state of the system when power is restored. Options include **Last State**, Power On and Power Off.

Interrupt 19 Capture

Select Enabled to allow ROMs to trap Interrupt 19. The options are Enabled and **Disabled**.

► Processor & Clock Options

CPU Information

This setting selects which physical CPU information to display.

Note: Zero is always the "Boot Strap Processor" or main CPU while all others are "Application Processors".

GART Error Reporting

This setting is used to Enable or **Disable** GART error reporting.

Microcode Update

This setting is used to **Enable** or Disable microcode updating.

Secure Virtual Machine Mode

This setting is used to **Enable** or Disable SVM.

Power Now

This setting is used to **Enable** or Disable the AMD Power Now feature for generating ACPI _PPC, _PSS and _PCT objects.

Power Cap

This setting can be used to decide the highest performance P-State in the operating system. Options include **P-State 0**, P-State 1, P-State 2, P-State 3 and P-State 4.

ACPI SRAT Table

This setting **Enables** or Disables the building of an ACPI SRAT table.

CPU Prefetching

This setting **Enables** or Disables CPU prefetching.

IO Prefetching

This setting **Enables** or Disables IO prefetching.

Probe Filter

Use this setting for the initialization mode for the probe filter. Options are **Auto**, **Disabled** and **MP Mode**.

► Advanced Chipset Control

► NorthBridge Configuration

► Memory Configuration

Bank Interleaving

Select **Auto** to automatically enable a bank-interleaving memory scheme when this function is supported by the processor. The options are **Auto** and **Disabled**.

Node Interleaving

Use this setting to enable the Node interleaving memory scheme when this function is supported by the processor. The options are **Enabled** or **Disabled**.

Channel Interleaving

Selects the channel-interleaving memory scheme when this function is supported by the processor. The options are **Disabled**, **Address Bits 6**, **Address Bits 12**, **XOR of Address Bits [20:16, 6]** and **XOR of Address Bits [20:16, 9]**.

Mem Clk Tristate C3/ALTVID

Use this setting to **Enable** or **Disable** memory clock tristate during C3 and ALT VID.

Memory Hole Remapping

When "Enabled", this feature enables hardware memory remapping around the memory hole. Options are **Enabled** and **Disabled**.

CS Sparing

This setting will reserve a spare memory rank in each node when enabled. Options are **Enable** and **Disable**.

DCT Unganged Mode

This setting enables unganged DRAM mode (64-bit). Options are Auto (ganged mode) and **Always** (unganged mode).

Power Down Enable

This setting enables or disables DDR power down mode. Options are **Enabled** and Disabled.

Power Down Mode

This sets the power down mode. Options are **Channel** and Chip Select.

► ECC Configuration**► ECC Mode**

This submenu affects the DRAM scrub rate based on its setting. Options include Disabled, **Basic**, Good, Super, Max and User. Selecting User activates the other options for user setting.

DRAM ECC Enable

This setting allows hardware to report and correct memory errors automatically, maintaining system integrity. Options are **Enabled** or Disabled.

DRAM Scrub Redirect

This setting allows the system to correct DRAM ECC errors immediately when they occur, even if background scrubbing is off. Options are **Enabled** or Disabled.

4-Bit ECC Mode

This setting enables 4-Bit ECC mode (also known as CHIPKILL ECC Mode). Options are **Enabled** or Disabled.

DRAM BG Scrub

DRAM scrubbing corrects memory errors so later reads are correct. Doing this while memory is not being used improves performance. Options are Disabled and time increments from 40ns to 655.4us with **163.8us** the default.

Note: When AMD's Node Interleave feature is enabled, the BIOS will force DRAM scrub off.

DATA Cache BG Scrub

This setting allows L1 data cache RAM to be corrected while idle. Options are Disabled and time increments from 40ns to 655.4us with **2.5us** the default.

L2 Cache BG Scrub

This setting allows L2 data cache RAM to be corrected while idle. Options are Disabled and time increments from 40ns to 655.4us with **2.5us** the default.

L3 Cache BG Scrub

This setting allows L3 data cache RAM to be corrected while idle. Options are Disabled and time increments from 40ns to 655.4us with **2.5us** the default.

► **DRAM Timing Configuration**

Memory Clock Mode

This setting specifies the memory clock mode. Options are **Auto**, Limit and Manual.

DRAM Timing Mode

This setting specifies the DRAM timing mode. Options include **Auto**, DCT 0, DCT 1 and Both.

Alternate VID

Specify the alternate VID while in low power states. Options are **Auto** and various voltages from .800V to 1.050V in increments of .025V.

Memory Timing Parameters

This setting selects which nodes timing parameters to display (CPU Node 0 or CPU Node 1).

► SouthBridge Configuration

OHCI/EHCI HC Device Functions

These settings allow you to either **Enable** or Disable functions for bus devices.

On Chip SATA Channel

This setting allows you to **Enable** or Disable the OnChip SATA channel.

On Chip SATA Type

Use this setting to set the On Chip SATA type. Options include **Native IDE**, RAID, AHCI and Legacy IDE.

SATA IDE Combined Mode

This setting allows you to **Enable** or Disable the SATA IDE combined mode.

PATA Channel Configuration

This allows you to set PATA channel configuration. Options include **SATA as Primary** or SATA as secondary.

► RD890 Configuration

► PCI Express Configuration

► Port Features

This submenu allows you to set the features for Ports 02 through 13 in the system. Each port submenu allows you to define the same settings below.

Gen 2 High Speed Mode

This setting allows you to set the Gen 2 high-speed mode. Options include **Auto**, Disabled, Software Initiated and Advertised RC.

Link ASPM

Use this setting to configure the Link ASPM. Options include **Disabled**, L0s, L1, L0s & L1, L0 Downstream and L0 Downstream + L1.

Link Width

Use this setting to configure the Link Width. Options include **Auto**, x1, x2, x4, x8 and x16.

Slot Power Limit, W

Use this setting to configure the Slot Power Limit power. The user can adjust this value using the + and - keys. The default is **75**.

Compliance Mode

This setting allows you to Enable or **Disable** the Compliance Mode.

Remap Port Device Number

This setting allows you remap the Port Device number. Options include **Auto** and port numbers between 2 and 13.

L1 Immediate ACK

This setting allows you to Enable or **Disable** L1 ACK. When enabled, the L1 will be ACK'd immediately.

Lane Reversal

Use this setting to Enable or **Disable** Lane Reversal.

Hot Plug Support

Use this setting to set Hot Plug Support. Options include **Disabled** and Native.

► NB-SB Port Features**NB-SB Link APSM**

Use this to set the NB-SB Link APSM. Options include **L1** and Disabled.

Link Width

This setting allows you to set the Link Width for the NB-SB port. Options include **Auto**, x1, x2 and x4.

NP NB-SB VC1 Traffic Support

Use this setting to **Disable** or Enable NP NB-SB VC1 traffic support.

Compliance Mode

Use this setting to Enable or **Disable** Compliance Mode for the NB-SB port.

► GPP Core Settings

These submenus allow you to specify GPP core settings. Each submenu allows you to define the same settings listed below.

Core Configuration

This setting allows you to configure core configuration. Options include Auto, 1x16 and **2x8**.

Powerdown Unused Lanes

This setting allows you to **Enable** or Disable the powerdown of unused lanes.

Turnoff PLL During L1/L23

This setting allows you to **Enable** or Disable turning off PLL during L1/L23.

TX Drive Strength

Use this setting to configure TX drive strength. Options include **Auto**, 26mA, 20mA, 22mA and 24mA.

TXCLK Clock Gating in L1

Use this setting to **Enable** or Disable the TXCLK clock gating in L1.

LCLK Clock Gating in L1

Use this setting to **Enable** or Disable the LCLK clock gating in L1.

► SB Core Setting

Turn Off PLL During L1/L23

Use this setting to Enable or **Disable** turning off the PLL during L1/L23.

TX Drive Strength

Use this setting to configure TX drive strength. Options include **Auto**, 26mA, 20mA, 22mA and 24mA.

TXCLK Clock Gating in L1

Use this setting to **Enable** or Disable the TXCLK clock gating in L1.

LCLK Clock Gating in L1

Use this setting to **Enable** or Disable the LCLK clock gating in L1.

► Hyper Transport Configuration**HT Extended Address**

This setting allows you to Enable or Disable the HT extended address. Options include Enabled, **Disabled** and Auto.

HT3 Link Power State

This setting allows you to configure the HT3 Link power state. Options include **Auto**, LS0, LS1, LS2 and LS3.

Unit ID Clumping

Use this setting to configure Unit ID clumping. Options include **Disabled**, Auto, UnitID 2/3, UnitID B/C and UnitID 2/3 & B/C.

HT Link Tristate

This setting allows you to configure the HT Link Tristate. Options include **Auto**, Disabled, CAD/CTL and CAD/CTL/CLK.

NB Deemphasis Level

Use this to set the NB deemphasis level. Options include Disabled, 0.4 dB, 1.32 dB, **-2.08dB**, 3.1 dB, 4.22 dB, 5.50 dB and 7.05 dB.

IOMMU

This setting is used to disable or set the GART size in systems without AGP. Options include AGP Present, **Disabled**, 32 MB, 64 MB, 128 MB, 256 MB, 512 MB and 1 GB.

USB 2.0 Controller Mode

This setting allows you to **Enable** or Disable the USB 2.0 Controller.

Legacy USB Support

Select Enabled to enable the support for USB Legacy. Disable Legacy support if there are no USB devices installed in the system. Selecting Auto disables Legacy support if no USB devices are connected. The options are **Disabled**, Enabled and Auto.

► IDE/Floppy Configuration

Floppy A

Use this setting to select the type of Floppy drive connected to the system. Options include Disabled, 360 KB (5.25), 1.2 MB (5.25), 720 MB (3.5), **1.44 MB (3.5)** and 2.88 MB (3.5).

Onboard PCI/IDE Controller

This setting allows you to **Enable** or Disable the onboard PCI/IDE controller.

► Primary/Secondary/Third/Fourth IDE Master/Slave Channel

LBA/Large Mode

LBA (Logical Block Addressing) is a method of addressing data on a disk drive. The options are Disabled and **Auto**.

Block (Multi-Sector Transfer)

Block mode boosts IDE drive performance by increasing the amount of data transferred. Only 512 bytes of data can be transferred per interrupt if block mode is not used. Block mode allows transfers of up to 64 KB per interrupt. Select "Disabled" to allow the data to be transferred from and to the device one sector at a time. Select "Auto" to allow the data transfer from and to the device occur multiple sectors at a time if the device supports it. The options are **Auto** and Disabled.

PIO Mode

PIO (Programmable I/O) mode programs timing cycles between the IDE drive and the programmable IDE controller. As the PIO mode increases, the cycle time decreases. The options are **Auto**, 0, 1, 2, 3, and 4. Select Auto to allow BIOS to auto detect the PIO mode. Use this value if the IDE disk drive support cannot be determined.

Select 0 to allow BIOS to use PIO mode 0, which has a data transfer rate of 3.3 MBs. Select 1 to allow BIOS to use PIO mode 1, which has a data transfer rate of 5.2 MBs. Select 2 to allow BIOS to use PIO mode 2, which has a data transfer rate of 8.3 MBs. Select 3 to allow BIOS to use PIO mode 3, which has a data transfer rate of 11.1 MBs. Select 4 to allow BIOS to use PIO mode 4, which has a data transfer rate of 16.6 MBs. This setting generally works with all hard disk drives manufactured after 1999. For other disk drives, such as IDE CD-ROM drives, check the specifications of the drive.

DMA Mode

Selects the DMA Mode. Options are **Auto**, SWDMA0, SWDMA1, SWDMA2, MWDMA0, MDWDMA1, MWDMA2, UDMA0, UDMA1, UDMA2, UDMA3, UDMA4 and UDMA5. (SWDMA=Single Word DMA, MWDMA=Multi Word DMA, UDMA=UltraDMA.)

S.M.A.R.T.

Self-Monitoring Analysis and Reporting Technology (SMART) can help predict impending drive failures. Select "Auto" to allow BIOS to auto detect hard disk drive support. Select "Disabled" to prevent AMI BIOS from using the S.M.A.R.T. Select "Enabled" to allow AMI BIOS to use the S.M.A.R.T. to support hard drive disk. The options are Disabled, Enabled, and **Auto**.

32-Bit Data Transfer

Select "Enabled" to activate the function of 32-Bit data transfer. Select "Disabled" to deactivate the function. The options are **Enabled** and Disabled.

IDE Detect Time Out (Sec)

Use this to set the time out value for detecting ATA/ATAPI devices. Options are 0-35 seconds in 5 second increments.

► PCI/PnP Configuration

Clear NVRAM

Select Yes to clear NVRAM during boot-up. The options are Yes and **No**.

Plug & Play OS

Select Yes to allow the OS to configure Plug & Play devices. (This is not required for system boot if your system has an OS that supports Plug & Play.) Select **No** to allow AMIBIOS to configure all devices in the system.

PCI Latency Timer

This option sets the latency of all PCI devices on the PCI bus. Select a value to set the PCI latency in PCI clock cycles. Options are 32, **64**, 96, 128, 160, 192, 224 and 248.

PCI IDE Busmaster

Use this setting to **Enable** or Disable BIOS using PCI Busmastering for reading/writing IO IDE drives.

ROM Scan Ordering

Use this setting to specify the ROM Scan ordering. Options include **Onboard First** and Addon First.

PCI Slot OPROM Settings

These settings are used to **Enable** or Disable slot OPROM (Option ROM firmware) for each slot.

Onboard LAN Option ROM Select iSCSI/PXE

This option is for selecting PXE or iSCSI support. The default is for **PXE** support.

Note: You must enable **ONLY** LAN1 when the iSCSI support option is specified.

Load Onboard LAN 1 Option ROM

Use this setting to Enable or **Disable** the onboard LAN 1 option ROM.

Load Onboard LAN 2 Option ROM

Use this setting to Enable or **Disable** the onboard LAN 2 option ROM.

Load Onboard SAS Option ROM

Use to setting to **Enable** or Disable SAS option ROM.

Boots Graphic Adapter Priority

Use this setting to specify the priority for the boot graphic adapter. Options include Slot 6, Other or **Onboard VGA**.

► Super IO Device Configuration

Serial Port1 Address

This setting specifies the base I/O port address and Interrupt Request address of serial port 1. Select "Disabled" to prevent the serial port from accessing any system resources. When this option is set to *Disabled*, the serial port physically becomes unavailable. Select "3F8/IRQ4" to allow the serial port to use 3F8 as its I/O port address and IRQ 4 for the interrupt address. The options are Disabled, **3F8/IRQ4**, 3E8/IRQ4 and 2E8/IRQ3.

Serial Port2 Address

This setting specifies the base I/O port address and Interrupt Request address of serial port 2. Select "Disabled" to prevent the serial port from accessing any system resources. When this option is set to "Disabled", the serial port physically becomes unavailable. Select "2F8/IRQ3" to allow the serial port to use 2F8 as its I/O port address and IRQ 3 for the interrupt address. The options are Disabled, **2F8/IRQ3**, 3E8/IRQ4 and 2E8/IRQ3.

Serial Port 2 Mode

This option specifies the Serial Port 2 mode used. Options include **Normal**, IRDA and ASKIR.

Serial Port3 Address

This setting specifies the base I/O port address and Interrupt Request address of serial port 3. Select "Disabled" to prevent the serial port from accessing any system resources. When this option is set to "Disabled", the serial port physically becomes unavailable. Select "3E8" to allow the serial port to use 3E8 as its I/O port address. The options are Disabled, 3F8, 2F8, **3E8**, and 2E8.

Serial Port3 IRQ

Use this setting to specify the IRQ of Serial Port 3. Options include IRQ3, IRQ4 and **IRQ5**.

► Remote Access Configuration

Remote Access

Allows you to **Enable** or Disable remote access. If enabled, the settings below will appear.

Serial Port Number

Selects the serial port to use for console redirection. Options are COM1, COM2 and **COM3**.

Serial Port Mode

Selects the serial port settings to use. Options are **(115200 8, n, 1)**, (57600 8, n, 1), (38400 8, n, 1), (19200 8, n, 1) and (09600 8, n, 1).

Flow Control

Selects the flow control to be used for console redirection. Options are **None**, Hardware and Software.

Redirection After BIOS POST

Options are Disable (no redirection after BIOS POST), Boot Loader (redirection during POST and during boot loader) and **Always** (redirection always active). Note that some OS's may not work with this set to Always.

Terminal Type

Selects the type of the target terminal. Options are ANSI, **VT100** and VT-UTF8.

VT-UTF8 Combo Key Support

Allows you to **Enable** or Disable VT-UTF8 combination key support for ANSI/VT100 terminals.

Sredir Memory Display Delay

Use this setting to set the delay in seconds to display memory information. Options are **No Delay**, 1 sec, 2 secs and 4 secs.

► Hardware Health Configuration

CPU Overheat Alarm

Use the "+" and "-" keys to set the CPU temperature threshold to between 65° and 90° C. When this threshold is exceeded, the overheat LED on the chassis will light up and an alarm will sound. The LED and alarm will turn off once the CPU temperature has dropped to 5 degrees below the threshold set. The default setting is **72° C**.

► System Fan Monitor

Fan Speed Control

This feature allows the user to determine how the system will control the speed of the onboard fans. The options are **Full Speed/FS (Max Cooling)**, Performance/PF (Better Cooling), Balanced/BL (Balance between performance and energy saving), Energy Saving/ES (Lower Power and Noise).

Other items in the submenu are systems monitor displays for the following information:

CPU1 Temperature, CPU2 Temperature (for 2U systems), System Temperature, NB Temperature, Fan 1-8 Reading, HT Voltage, CPU1 Mem VTT, CPU2 Mem VTT, CPU1 Mem, CPU2 Mem, CPU1/2 VCore, 1.1V, 1.5V, 5V +12V, -12V, 3.3 Vcc, 3.3 VSB and VBAT.

► ACPI Configuration

WHEA Support

Use this setting to **Enable** or Disable WHEA (Windows Hardware Error Architecture) support. WHEA provides a common infrastructure for reporting hardware errors on Windows platforms and was designed to improve recovery following fatal hardware errors.

PS2 KB/MS Wakeup

This setting Enables or **Disables** PS2 Keyboard and Mouse wakeup.

High Performance Event Timer

This setting **Enables** or Disables the High Performance Event Timer.

ACPI Aware O/S

This setting enables or disables ACPI support for the Operating System. Options include **Yes** for enable and No for disable.

ACPI APIC Support

Determines whether to include the ACPI APIC table pointer in the RSDT pointer list. The available options are **Enabled** and Disabled.

Headless Mode

Use this setting to Enable or **Disable** headless operation mode through ACPI.

ACPI Version Features

Use this setting to determine which ACPI version to use. Options are ACPI v1.0, **ACPI v2.0** and ACPI v3.0.

► IPMI Configuration

► View BMC System Event Log

Pressing the Enter key will open the following settings. Use the "+" and "-" keys to navigate through the system event log.

Clear BMC System Event Log

Selecting this and pressing the Enter key will clear the BMC system event log.

► Set LAN Configuration

This menu contains options for inputting settings for the SET LAN Configuration Command. See IPMI 1.5 Specification, table 11.1 for details. Use the "+" and "-" keys to choose the desired channel number.

Note: Each question in this group may take a considerable amount of time.

IP Address Source

Select the source of this machine's IP address. If Static is selected, you will need to know and enter manually the IP address of this machine below. If DHCP is selected, the BIOS will search for a DHCP (Dynamic Host Configuration Protocol) server in the network it is attached to, and request the next available IP address. The options are **DHCP** and Static.

The following items are assigned IP addresses automatically if DHCP is selected under IP Address Source above:

► **IP Address**

In the field provided here enter the IP address in the decimal form of xxx.xxx.xxx.xxx with xxx having a value of less than 256 and in decimal form only.

► **Subnet Mask**

In the field provided here enter the Subnet address in the decimal form of xxx.xxx.xxx.xxx with xxx having a value of less than 256 and in decimal form only.

► **Gateway Address**

In the field provided here enter the Gateway address in the decimal form of xxx.xxx.xxx.xxx with xxx having a value of less than 256 and in decimal form only.

► **MAC Address**

In the field provided here enter the MAC address in the hex form of xx.xx.xx.xx.xx.xx with xx in hex form only.

BMC Watch Dog Timer Action

This setting is used to set the Watch Dog function, which allows the BMC to reset or powerdown the system if the OS crashes or hangs. The options are **Disabled**, Reset System, Power Down and Power Cycle.

► **Event Log Configuration**

View System Event Log

Pressing the Enter key will open the event log. Use the "↑" and "↓" keys to navigate through the system event log.

Mark All Events as Read

Selecting this and pressing the Enter key marks all events as read in the event log.

Clear BMC System Event Log

Selecting this and pressing the Enter key clears the system event log.

PCI Express Error Logging

This setting Enables or **Disables** the PCI Express advanced event logging.

4-4 Security Menu

AMI BIOS provides a Supervisor and a User password. If you use both passwords, the Supervisor password must be set first.

Change Supervisor Password

Select this option and press <Enter> to access the sub menu, and then type in the password.

Change User Password

Select this option and press <Enter> to access the sub menu, and then type in the password.

Boot Sector Virus Protection

This option is near the bottom of the Security Setup screen. Select "Disabled" to deactivate the Boot Sector Virus Protection. Select "Enabled" to enable boot sector protection. When "Enabled", AMI BIOS displays a warning when any program (or virus) issues a Disk Format command or attempts to write to the boot sector of the hard disk drive. The options are Enabled and **Disabled**.

4-5 Boot Menu

The Boot Menu is accessible only when the "Load Onboard LAN Option ROM" setting (in the PCI/PnP Configuration menu) is enabled.

► Boot Device Priority

This feature allows the user to prioritize the boot sequence from the available devices.

► Hard Disk Drives

This feature allows the user to specify the boot sequence from available hard disk drives.

► Removable Drives

This feature allows the user to specify the boot sequence from available removable drive devices.

► CD/DVD Drives

This feature allows the user to specify the boot sequence from available CD/DVD drives.

4-6 Exit Menu

Select the Exit tab from AMI BIOS Setup Utility screen to enter the Exit BIOS Setup screen.

Save Changes and Exit

When you have completed the system configuration changes, select this option to leave BIOS Setup and reboot the computer, so the new system configuration parameters can take effect. Select Save Changes and Exit from the Exit menu and press <Enter>.

Discard Changes and Exit

Select this option to quit BIOS Setup without making any permanent changes to the system configuration and reboot the computer. Select Discard Changes and Exit from the Exit menu and press <Enter>.

Discard Changes

Select this option and press <Enter> to discard all the changes and return to AMI BIOS Utility Program.

Load Optimal Defaults

To set this feature, select Load Optimal Defaults from the Exit menu and press <Enter>. Then Select "OK" to allow BIOS to automatically load the Optimal Defaults as the BIOS Settings. The Optimal settings are designed for maximum system performance, but may not work best for all computer applications.

Load Fail-Safe Defaults

To set this feature, select Load Fail-Safe Defaults from the Exit menu and press <Enter>. The Fail-Safe settings are designed for maximum system stability, but not maximum performance.

Appendix A

BIOS Error Beep Codes

During the POST (Power-On Self-Test) routines, which are performed each time the system is powered on, errors may occur.

Non-fatal errors are those which, in most cases, allow the system to continue the boot-up process. The error messages normally appear on the screen.

Fatal errors are those which will not allow the system to continue the boot-up procedure. If a fatal error occurs, you should consult with your system manufacturer for possible repairs.

A-1 BIOS Error Beep Codes

BIOS Error Beep Codes		
Beep Code	Error Message	Description
1 beep	Refresh	Circuits have been reset. (Ready to power up)
5 short beeps + 1 long beep	Memory error	No memory detected in the system
8 beeps	Display memory read/write error	Video adapter missing or with faulty memory
Continuous high pitch and low pitch with the front panel OH LED on	System Overheat	System Overheat

Notes

Appendix B

Installing Windows

After all hardware components have been installed, you must first configure Intel South Bridge RAID Settings before you install the Windows OS and other software drivers. To configure RAID settings, please refer to RAID Configuration User Guides posted on our website at www.supermicro.com/support/manuals.

B-1 Installing Windows to a RAID System

1. Insert Microsoft's Windows XP/2003/2008/Vista Setup CD in the CD driver and the system will start booting up from CD.
2. Press the <F6> key when the message "Press F6 if you need to install a third party RAID driver" displays.
3. When the Windows OS Setup screen appears, press "S" to specify additional device(s).
4. Insert the driver diskette "ITE RAID Windows XP/2003/2008/Vista Driver for IDE" into the floppy drive and press the <Enter> key.
5. When the Windows OS Setup screen appears, press "S" to specify additional device(s).
6. Insert the driver diskette into the drive and press the <Enter> key.
7. Choose the LSI SAS RAID driver indicated in the Windows OS Setup screen, and press the <Enter> key.
8. Press the <Enter> key to continue the installation process. (If you need to specify any additional devices to be installed, do so at this time.) Once all devices are specified, press the <Enter> key to continue with the installation.
9. From the Windows OS Setup screen, press the <Enter> key. The Windows OS Setup will automatically load all device files and then, continue the Windows OS installation.
10. After the Windows OS Installation is completed, the system will automatically reboot.

B-2 Installing Windows to a Non-RAID System

1. Insert Microsoft's Windows XP/Windows 2003/Windows 2008/Windows Vista Setup CD in the CD drive and the system will start booting up from CD.
2. Continue with the OS installation. The Windows OS Setup screen will display.
3. From the Windows OS Setup screen, press the <Enter> key. The Windows OS Setup will automatically load all device files and then continue with the Windows OS installation.
4. After the Windows OS Installation is completed, the system will automatically reboot.
5. Insert the Supermicro Setup CD that came with your motherboard into the CD drive during system boot, and the main screen will display.

Appendix C

System Specifications

Processors

Dual AMD Opteron 2000 series (Socket F type) processors

Note: Please refer to our web site for a complete listing of supported processors.

Chipset

AMD SR5690 chipset/SP5100 Southbridge

BIOS

16 Mb AMIBIOS® SPI Flash ROM

Memory Capacity

Sixteen single/dual channel DIMM slots supporting up to 128 GB of DDR2-800/667/533 registered ECC SDRAM

Note: Due to a CPU limitation, fully populating DIMM slots with DDR2-667 will pull the speed down to 533 MHz (see our web site for possible updates to this). Refer to Section 2-4 before installing memory and our web site for recommended DIMMs.

SATA Controller

Intel on-chip (SP5100) controller for 6-port 3 Gb/s SATA (RAID 0, 1, and 10 supported)

SAS Controller

LSI 1068E controller for eight-port SAS (RAID 0, 1, 10 and JBOD supported

- RAID 5 supported with optional iButton installed)
- SR and IT modes are supported, IR mode is not supported

SAS/SATA Drive Bays

Eight hot-swap drive bays to house eight standard SAS/SATA drives (for AS-2021A-32R+F systems) or six standard SAS/SATA drives (AS-2021A-T2R+F systems)

Peripheral Drive Bays

One slim floppy drive (optional)

One slim DVD-ROM drive

Expansion Slots

Two PCI-Express x16 (x8 signal) slots, one PCI-Express x8 slot, one (1) PCI-Express x8 (x4 signal) slot and two (2) PCI-X 133 slots.

Serverboard

H8Dli+-F/H8DI3+-F (Extended ATX form factor)

Dimensions: 12" x 13" (310 x 330 mm)

Chassis

SC825TQ-R720LPB (2U rackmount)

Dimensions: (WxHxD) 16.8 x 3.5 x 25.5 in. (427 x 89 x 648 mm)

Weight

Gross (Bare Bone): 57 lbs. (25.9 kg.)

System Cooling

Three (3) 8-cm system cooling fans

System Input Requirements

AC Input Voltage: 100-240V AC auto-range

Rated Input Current: 9A - 4A

Rated Input Frequency: 50 to 60 Hz

Efficiency: 80+ (Gold Level)

Power Supply

Rated Output Power: 720W (Part# PWS-721P-1R)

Rated Output Voltages: +12V (59A), +5Vsb (4A)

Operating Environment

Operating Temperature: 0° to 35° C (32° to 95° F)

Non-operating Temperature: -40° to 70° C (-40° to 158° F)

Operating Relative Humidity: 20% to 95% (non-condensing)

Non-operating Relative Humidity: 5 to 95% (non-condensing)

Regulatory Compliance

Electromagnetic Emissions: FCC Class A, EN 55022 Class A, EN 61000-3-2/-3-3, CISPR 22 Class A

Electromagnetic Immunity: EN 55024/CISPR 24, (EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 61000-4-11)

Safety: CSA/EN/IEC/UL 60950-1 Compliant, UL or CSA Listed (USA and Canada), CE Marking (Europe)

California Best Management Practices Regulations for Perchlorate Materials:
This Perchlorate warning applies only to products containing CR (Manganese Dioxide) Lithium coin cells. "Perchlorate Material-special handling may apply. See www.dtsc.ca.gov/hazardouswaste/perchlorate"

Notes

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